

The magazine for AUSTRALIAN amateurs



March 2004
Volume 72 No 3



Amateur Radio

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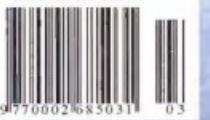


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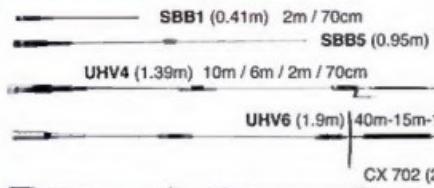
- Some useful wire antennas for HF | Rob Gurr VK5RG |
- A high power RF attenuator | Ron Sanders VK2WB |
- Traps for multi-band antennas | Lindsay Lawless VK3ANJ |
- Know your secondhand equipment | Ron Fisher VK3OM |
- Protecting your equipment | Alex Santana of NSW police |

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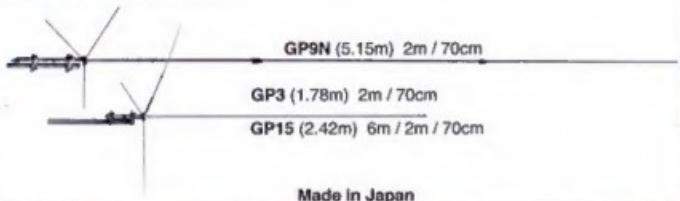


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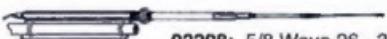


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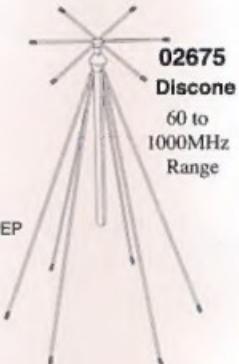
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Amateur Radio

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Our Cover this month

The International Space Station. Picture released by NASA to support the AMSAT-UK - Space Symposium 2004
'This 3 day event always attracts Radio Amateurs from across Europe as well as North America, Africa, Asia and the Pacific.' See rest of story on page 43

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members amateur radio experiments, experiences opinions and news. Manuscripts with drawings or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA Federal

Office (until stocks are exhausted), at \$4.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus an additional \$2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Representing

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Editorial comment

Colwyn Low VK5UE

The big questions

The year is now well advanced and the WIA Divisions are preparing for their AGMs. The Federal WIA is also in the process of finalising this year's Convention in Brisbane and the selection of Directors and Co-ordinators. The WIA runs on volunteers and if no one volunteers we will have a group of "N. O. Ones" on our Committees and we all know "N. O. One" does nothing.

We need to think about where we go in the next 12 months, who we know will support that position and be able to put the case for its implementation. Then we should try and talk them into standing for election. If some one thinks we have the "Right Stuff" we should think seriously about accepting nomination. We should also look on the positions as being for one year at a time and not a life sentence.

The other big issue is "How do we set up a National WIA?" In this issue you will find a draft constitution for a National rather than a State based WIA. Please read the material carefully, discuss it with your amateur friends, discuss it at your Radio Club and discuss it with your Divisional representatives. There are some issues that will have to be sorted within a new structure. There is the provision of basic communication facilities like repeaters. Should there be local control and financial support? Should there be a national linked repeater network supported by the national body? How do we treat existing Divisional resources in the transition to a national body? However the primary decision is "Is NOW the time to recast the structure of the Australian Wireless Institute?" Given a yes and good will between all the Divisions, we can move forward to a new structure and a better WIA. It is in your, the members, hands, let us make sure we make decisions for the greater good and for the future of AMATEUR RADIO not immediate self interest.

I received a saddening letter this week from A.W. (Alex) Ellison ex VK4RU. Alex's health is not the best and his age prevents him continuing with the hobby that has provided him

with many enjoyable years. He felt he had to sell all his station equipment and cancel his Amateur Radio Magazine which he enjoyed reading. He has been an avid CW operator and I'm sure his fist will be missed. He closed by wishing us all the best for our hobby. Thank you for the letter Alex and your good wishes. We hope you will find other activities to enliven your life. 73 VK5UE

Last month I told you I was building an 8 element 70-cm collinear from notes used by the Summerland ARC. Well I got it all together and it works quite well. The SWR is acceptable but I need to get the fine day and a couple of hours to set it up with some equipment and optimise the position of the toroids that block the currents in the coaxial cable outer. This has been a useful exercise. I learnt something and got a useful antenna.

I am currently thinking about what to do for the John Moyle Field, where to go and which bands to operate. There is always the decision on aerials. I feel wire aerials, which are multiband, are most convenient and use aerials with links at the appropriate lengths to get 80, 40 and 20 metre dipoles. I have also constructed yagi for 2 metre, 70 cm and 23 cm and wooden or fibreglass poles to get them about 6 metres off the ground. I think this year I will use the collinear for 2 metre and 70 cm and the yagi on 23 cm. Come to think of it its time I completed the 23 cm amplifier I started 2 years ago to lift my 200 mw towards a watt.

Well I hope you are all able to find some satisfying amateur activity this month, possibly you may get a chance to let someone know the variety of things you can do if you have an amateur licence.

You might even be able to set them on the road to get a licence.

73 Colwyn VK5UE

Ernest Hocking VK1LK

WIA Federal President

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Turning point

I will keep this very short and too the point this month since there is much of far greater importance that this issue of AR contains. Since February much work has been performed by the group to explore and document the issues in moving towards a National WIA. This issue contains a number of documents including a draft of a new constitution. Many thanks are due to Michael Owen for his expertise in this area and offering his time to assist in the exercise. It is impractical to include all of the material that has been produced in this issue of AR. The other documents will be published on the WIA web page over coming days. Again I would like to thank everyone who helped but especially Chris Jones for putting in an incredible effort on the business planning side of things.

The proposed new WIA Constitution

Elsewhere in this issue you will find a copy of the proposed new constitution.

The "Constitution" is the proposed Constitution to replace the current Memorandum and Articles of Association of the Wireless Institute of Australia, as described in the Explanatory Memorandum.

While today companies are no longer governed by state law, but by the Commonwealth Corporations Act, the Wireless Institute of Australia is a company limited by guarantee incorporated in 1972 under the Victorian

Companies Act 1961 and holding a certificate of the Victorian Attorney General to dispense with the word "Limited" in its title, and which imposed certain additional conditions.

The consent of the Victorian Attorney General is required to change the Memorandum and Articles of Association of the WIA, and so an application for that consent and the amendment of the Attorney General's certificate has been lodged, so that in future that consent will not be

required. In the future the company will be subject to the Federal act, administered by the Australian Securities and Investments Commission, ASIC, and the new Constitution will be lodged with it.

With the consent of the Attorney General and the amendment of the certificate, the Divisions will have the opportunity to adopt the new Constitution at the Federal Convention at the start of April by passing a Special Resolution.

Before closing this month I would like to express my congratulations to Peter Naish on behalf of the amateur radio community of Australia. Peter has been elected as the next Chairman of IARU

Region 3. After many years of service to amateur radio here in Australia it is a pleasure to see him taking on the role of representing amateurs across the whole

of the Asia Pacific Region. Well done Peter

So 73s and all the best in amateur radio.

Join WIA today

"There is no denying that radio today still has all the magic that attracted people to the hobby all those years ago, when it first emerged onto an unsuspecting world."

Ernie Hocking, President
Amateur Radio April 2002



WIA is active in:

- QSL services
- Major role in amateur radio education
- Coordination of contests and awards
- Monitoring of illegal activity

How to join WIA

- Through your local amateur radio club
- Through your Division (contact details on page 56)
- Contact WIA Federal Office (03) 9528 5962

Some useful wire antennas for HF

Part 1

Rob S Gurr VK5RG

35 Grandview Avenue, Urrbrae SA, 5054,

Rob shares his comprehensive knowledge of wire antennas with us.

[This article originally appeared in Amateur Radio Magazine Vol. 64, No 3, March 1996. (Other parts of the original three part series will appear in future issues. Editor VK5UE)]

When a new amateur operator makes his first enquiries to those already on the air, seeking advice on the best antenna to erect, he is frequently greeted with a short answer, which is actually an amateur callsign. "The G5RV" will be the response from some, the "G8PO" from others, and perhaps even the "ZL Special" from a few. Others may recommend a "W8JK", a "HB9CV", or a These names mean very little to a beginner who is looking to establish his own station.

What do these and other similar titles mean, and what benefits does he get by using such an antenna? Why are there so many choices, and why can't he go straight to the best type, fully confident that it will work first try? In this article I will discuss the above antennas, and also describe some other very useful HF wire antennas, which, as yet, have not been given a title that identifies a person, rather than physical item. Firstly, though, a few general matters about antennas.

Some wire antenna considerations

The wire

A 100 metre reel of 2.5 mm² stranded copper earth wire with PVC insulation costs about \$40 from electrical trade outlets. Don't buy it by the metre at retail hardware shops or you may pay up to three times this price. One hundred metres may last a long while; however, a friend may share the cost with you. In most cases, by the time an antenna and feedline are constructed, there will be little surplus. Also available is electric fence wire, from farming supply outlets;

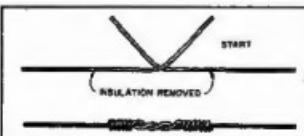


Figure 1-Splicing antenna wire.
(Reprinted from The ARRL Antenna Book 15th Edition, page 21.3)

a sample reveals this to be multi-stranded steel wire, with one conductor of copper.

Connectors

Soldering wire joints outdoors is not always practical. The use of commercial brass earth connectors, such as Clipsal Type 56312, or similar, is recommended. These may be covered over with insulation tape or, additionally, silicone rubber, if improved weatherproofing is required. The soldered joint is to be preferred; however, it should be a mechanically suitable joint, with wires twisted a number of times, or clamped, before solder is applied. I have had satisfactory experience with the "Post Office", or "Lineman's Joint", and find them quite suitable for copper wire aerial connections (see Figs 1 & 2).

Masts

Steel tubes, section-alised masts, wooden or bamboo poles are all suitable. The use of trees, house fascias, and other elevated supports is also possible, providing suitable anchoring techniques are used. "U" bolts, turnbuckles, etc, are a standard hardware shop line. Height above ground will generally legally be restricted to 10 metres. However, if

you are willing to obtain the necessary permit, heights up to 15 metres may be used in a number of suburban installations. There is, unfortunately, a significant disadvantage in using this additional height on some frequencies. With trees, due to wind sway, use of halyards and pulleys utilising springs and counterweights is recommended. Wet foliage under certain circumstances may be a problem.

Guy wires

Stranded steel galvanised wire may be used, and often surplus stainless steel rope is available. Joints can be made using clamps, turnbuckles and thimbles, as well as the above-mentioned Post Office splice (see Fig 2) method. It is good practice to use insulators liberally

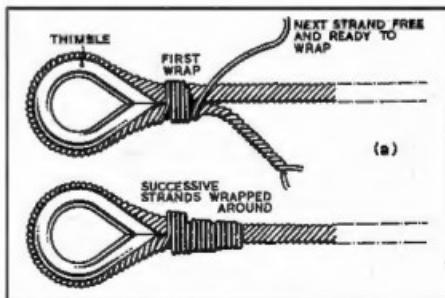


Figure 2 - The "Post Office" splice for securing stranded wire around a thimble or insulator. (Reprinted from RSGB Radio Communications Handbook, fifth edition page 12.91)

(about every 3 metres), however, if a one-length guy wire is preferred, an insulator at the top and bottom is essential. This requirement is to ensure that the length of wire associated with any unbonded metal-to-metal contact (thimble through the eye of a turnbuckle) is as short as possible.

This prevents large signal pickup and subsequent re-radiation should corrosion at the junction occur. We are all familiar with unexplained "crackles" on our receivers, and also with cross-modulation involving broadcast stations, which mysteriously worsens on dry windy days! Should it be necessary to have a long length of guy wire, or a cable catenary system that cannot be broken up with insulators, all metal to metal flexible contacts should be bonded over, or liberally coated with a graphite (conducting) grease; EMF Welder Grease, by Golden Fleece, has been my favourite, but other brands are available. It is not necessary to break guy wires into short sections using insulators. If you are inclined to do so, break them at quarter wavelengths on the highest frequency in use, i.e. every 2.5 metres for 28 MHz.

Transmission lines and spreaders

The construction of a suitable open wire line can be simplified by the use of 16 mm, or 20 mm, heavy-duty electrical conduit.

Doubts may be held by some readers about the suitability of plastic as an insulator for feedlines in this manner, but I don't think a contact has ever been lost due to such small losses. Another insulator material, already protected for UV radiation, is the popular black

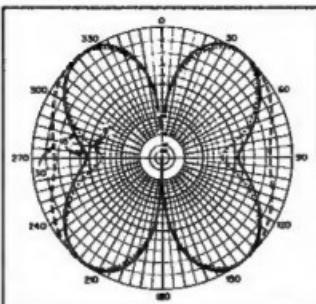


Figure 4 - Horizontal patterns of radiation from a full-wave antenna. (Reprinted from the ARRL Handbook, 1988 Edition, page 17.8)

garden automatic water sprinkler hose, about 4 mm diameter. Feedlines should be drawn away from antenna arrays at right angles, particularly where close to towers and other metallic supports. The use of UPVC to ensure minimum deterioration due to ultraviolet radiation is not considered necessary. Holes in the conduit to allow the wire to pass through, and a smaller diameter tie wire to prevent the spacer slipping down the feedline are required. Textbooks and practical experience vary. A line constructed for 300 to 800 ohms would be suitable in most cases, e.g. the 300 ohm open wire TV ladder line is satisfactory; however, do not use any other type of 300 ohm commercial feed line. A home-made line, of spacing between 50 and 150 mm is recommended, with spacers installed every 300 mm for narrow spaced lines and every one metre for wide spaced lines.

Lines could be pulled tight, but a loose hanging line with no right angle bends is acceptable. Wind sway may be a minor problem unless the lines are running close to earthed metal surfaces such as roofs, towers, etc. I would inject a word of warning here. Do not treat a tiled roof as an unearthed surface. Usually below the tiles you will find hot and cold water, and gas pipes, electrical

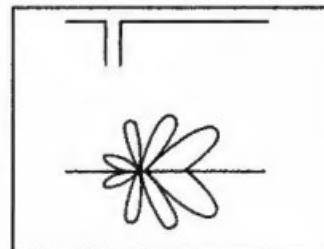


Figure 5 - Radiation pattern of a long wire antenna fed from a low impedance point near one end. (Reprinted from The Radio Handbook, twenty-first edition, page 28.3)

wiring, TV antennas and associated cables, telephone wires, etc, all of which have an influence on any nearby aerials or feedlines. The entry of the feedline (2 x 2.5 mm² insulated copper stranded wire) to the radio room is best via feed-through insulators; there are many variants available, most of which suggest themselves.

Do not run through a metal frame window and close the window on the line. The window may be at a quarter wave point and the high voltage will burn the insulation through, and so on. Brickwork entry is possible using small diameter glass tubes in mortar courses, etc.

Be certain to maintain the same spacing between the conductors for the full length of the line to the ATU. A good test of a feedline is to listen on it, through the ATU, when the aerial is disconnected. If you hear nothing, then it is balanced.

It is good practice to have an integral number of quarter waves in a feedline; however, random lengths do not inhibit good results, they only make the ATU work into complex reactive loads.

In some cases a number of ATUs, tuned for separate bands, may be remotely located and fed from the transmitter through coaxial cable.

Element spreaders

Spreaders for separating the elements can also be made from electrical conduit, with a wooden dowel, or fibreglass rod, inserted internally to give rigidity. The conduit lengths available are regrettably a maximum of four metres. Some ingenuity may be required to make simple spreaders longer than this.

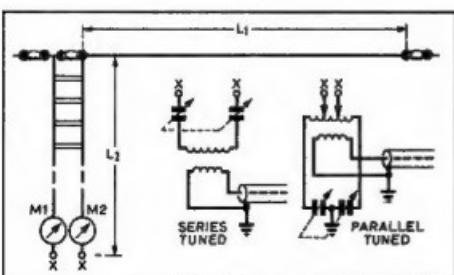


Figure 3 End-Fed Zepp. (Reprinted from the RSGB Radio Communications Handbook, fifth edition, page 12.61)

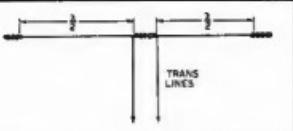


Figure 6 - A two-element collinear array (two halfwaves in phase). (Reprinted from The ARRL Antenna Book, 15th Edition, page 8.32)

Aluminium tube, 25 mm in diameter, may be suitable for up to five or six metres and, as it is usually at right angles to the antenna wires, should have little effect on radiation. Short aluminium tube lengths may be also used for joining wooden dowels, prior to enclosure in PVC conduit. Conduit and caps (Clipsal 252 series) are recommended, to finally enclose the spreader.

Fibreglass rods may also be fabricated to form elongated "cages" for spreaders up to five metres long.

Coupling units

Most of the antennas to be described are balanced and symmetrical. The feedlines are not always 'flat' (SWR terminology) and the impedances

presented at the amateur equipment may vary from less than 20 to over 1000 ohms. Most multipurpose ATUs ('Z' Match, 'T' match with balun) may be adjusted, with the assistance of a suitable SWR meter, to convert these impedances to 50 ohms, to interface with standard amateur equipment. The description of a suitable ATU is included at the end of this article.

Earthing systems

It is desirable for all aerial installations to have a good RF earth, and when using end-fed wire antennas (verticals or horizontal), it is essential. There are many practical reasons for this, and if one very good earth point can be established immediately adjacent to the ATU, and all other equipment bonded back to this point, it should be sufficient for most applications. The earth lead should be as short as possible as the ATU is part of the antenna system. All bonding earths to equipment are ancillary to this main lead.

It should be remembered that the amateur equipment itself should be separately earthed through the three-wire power cable. The General Purpose Outlet and the whole electrical system, all complying with the requirements of the SAA Wiring Rules AS3000.

A suitable earth stake may be a two-metre length of 20 mm water pipe driven into the ground, with a standard electrical earth clamp for connection of

the wire. In the case of end-fed wires, or ground planes, all nearby exposed metal such as carport supports, roof decking, galvanised fences, domestic water pipes, should be bonded back to the earth stake. A suitable wire is 6 mm² insulated earth wire (Green/Yellow) from an electrical trade outlet. Remember, the longer the earth lead, the higher the ATU is above radio frequency ground. The reason you get "bites" from microphone cases and equipment is that these items are often a quarter wave above ground where a high RF voltage exists.

Never rely on the mains earth as it may be a long way to the main switchboard, and even longer to the main earth stake. These aspects are most important in the end-fed antenna situation. In a practical situation, most amateurs should be able to achieve an earth wire of no more than a metre in length. Do not place your ATU at the top of everything else, or you may easily encounter that undesirable quarter-wave!

End-fed "Zeppelin"

A halfwave dipole fed at one end with a non-radiating feedline, exhibits bi-directional radiation properties near its resonant frequency and on lower frequencies only (see Fig 3). At higher frequencies, major and minor lobes appear and its use on harmonics for multiband operation provides useful gain, particularly when considering harmonics above the fourth or fifth (see Fig 4).

One such aerial is usually known as the end-fed "Zepp". Actually, the figure-eight pattern of the dipole radiation, and symmetry of the lobes on harmonics, is somewhat distorted, to give a directional radiation away from the feeder end (Fig 5). These aspects are worthy of further reading; however, for a "backyard" installation, its application is somewhat limited if directivity is required. The above aspects do not preclude the end-fed dipole being used as the driven element of a collinear phased array. In

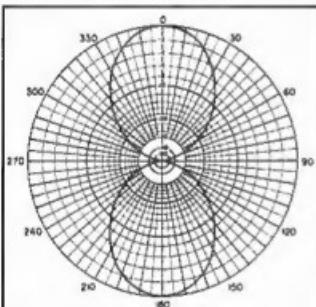


Figure 7 - free-space E-plane directive diagram for a two element collinear array. (Reprinted from The ARRL Antenna Book, 15th Edition, page 8.32)

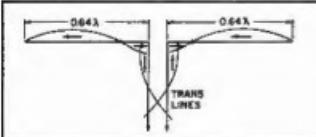


Figure 8 - The extended double Zepp. This system gives somewhat more gain than two half-wave collinear elements. (Reprinted from The ARRL Antenna Book, 15th Edition, page 8.34)

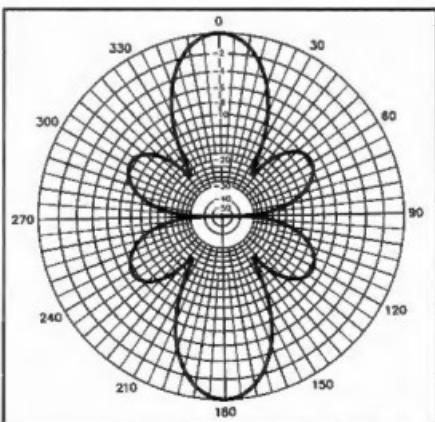


Figure 8a - E-plane pattern for the extended Zepp. (Reprinted from The ARRL Antenna Book, 15th Edition, page 8.34)

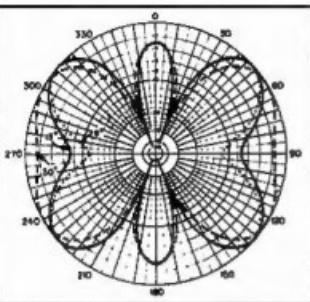


Figure 9 - Horizontal patterns of radiation from an antenna three half-wavelengths long. (Reprinted from the ARRL Handbook, 1988 Edition, page 17.8)

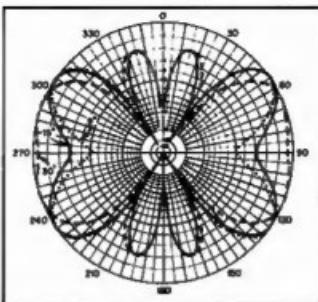


Figure 10. - Horizontal patterns of radiation from an antenna two wavelengths long. (Reprinted from the ARRL Handbook, 1988 Edition, page 17.8)

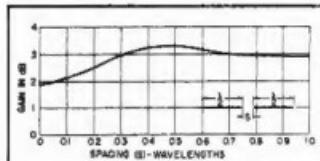


Figure 11 - Gain of two collinear half-wavelength elements as a function of spacing between the adjacent ends. (Reprinted from The ARRL Antenna Book, 15th Edition, page 8.32)

Specific dimension for this is simply calculated by assuming a design frequency of 10.1 MHz, where a half wavelength is 14.85 metre. This gives a somewhat improved DX performance on the G5RV (mentioned later), where bi-directional properties occur on the 3.5 and 7 MHz bands only, and multi-directional lobes become evident on 10.1 MHz.

As an ATU is necessary to get multi band operation from this antenna and a G5RV, this shorter antenna has more to offer.

Maximum gain possible in any combination of two dipoles is 3 dBd; i.e. two arrays with unity power can only produce twice power under any condition. This is an important fundamental in understanding antenna gain (Fig 11).

Part 2 of Some Useful Wire Antennas for HF will appear in a later issue of Amateur Radio.

fact, some physical layouts may require such a feed (sometimes the line of support poles may be at right angles to that necessary for the use of an alternative directional array). Such arrays stay bi-directional, in a direction at right angles to the line of their support masts.

Centre-fed "Zepp"

An array of two in-line (collinear) half-wave elements (Fig 6), fed in the centre with a tuned feeder, exhibits a gain of 1.8 dBd (4 dBi) (see Fig 7). This is known generally as two half waves in phase. By extending the dipole lengths to 5/8 wave, the array becomes two extended half-waves in phase (Double Extended Zepp), with a gain of 3 dBd (5.2 dBi) (see

Fig 8). Such an antenna, usually with end feed, is well known to 144 MHz operators as a "Ringo". When such an array is erected and tuned for 14 MHz, it is coincidentally two half waves in phase on 10.1 MHz. On 7 and 3.5 MHz the array is effectively a long dipole and a short dipole respectively, but with still the same bi-directional radiation. We now have a bi-directional array for 3.5 to 14 MHz, with a useful gain on both 10 and 14 MHz.

On higher bands the bi-directional lobes are replaced by multiple lobes (Fig 9), at various angles, however the main lobes continue to exhibit even higher gain. Regrettably, they may not be in the direction that you may wish to frequently contact (Fig 10).

George Hunt VK3ZNE

It is with regret that we record the passing of George Hunt VK3ZNE. He died on 9 November 2003, aged 72.

Long time listeners to the VK3BWI broadcast will know that George was the WIA Victoria Broadcast Officer for a number of years and did a fine job.

He was employed by ABC radio from about 1969 to 1985 in the recording and production section working on many of the well known shows broadcast during that period.

George obtained his amateur licence in the mid-1970s and was one of about

a dozen members of the unofficial ABC amateur radio club.

After developing a heart condition George retired from the ABC on health grounds. A few years later he joined the WIA Victoria Council serving as the Broadcast officer, Disposals Officer and had responsibility for building maintenance.

He excelled as Broadcast Officer and

announcer, with his friendly disposition an asset that kept the broadcast team both on its toes in terms of transmission quality, and maintained their enthusiasm.

Vale - George Henry Hunt VK3ZNE.

Submitted by Jim Linton VK3PC,
President, WIA Victoria

Silent Key

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Protecting your equipment

Alex Sentana LU9BAW, ECO
NSW Police, Fairfield LAC
sentale@police.nsw.gov.au

Burglary is one of the more common crimes in Australia; it has a high incidence across jurisdictions and is a major concern to the Australian community. Burglary accounts for over one fifth of all offences recorded by the police. Most urban Australians, if they have not already been the victim of a burglary, would know someone who has. The odds are that most urban residents will become the victim of a burglary at least once in their lives.

Being burgled can have a devastating impact on families whose privacy has been violated and household belongings stolen. The impact of walking into a burglary is huge. You may experience fear, anxiety, anger and rage, especially if the offenders have taken your beloved rigs!

One of my tasks as Ethnic Community Liaison Officer for the NSW Police is to deliver information sessions on crime prevention for the culturally and linguistically diverse communities in NSW.

The aim of these sessions is to promote individual and community awareness in preventing and reducing property crime and improving personal safety.

Being a radio amateur for 28 years, it came to my mind that part of the session directly relates to amateur radio and so decided to write an article to help hams in preventing their equipment from being stolen.

Thieves like portable, high value, easily saleable goods like music CDs, mobile phones, jewellery, and others such as videos, computer hard drives, cameras etc. Communications equipment these days are very portable and some of them are small enough to be carried in a pocket. However, some may cost more than a car.

By introducing some practical security precautions into everyday life, you can take an active role in reducing the chance to get burgled. One of these security precautions is to mark your property, which can be done in a number of ways such as using an engraving tool, ultra violet pens or microdot technology.

Engraving

A simple procedure to avoid rigs going for a walk with strangers is to mark them

in such a way that is easily identifiable. This can be achieved by engraving them. You can engrave your callsign on your equipment or any other mark that you will remember, or simply (my preferred method) engrave your driver's licence following the letters NSW (Picture 1).

If eventually you sell your rig, place a neat line through your engraving to show that it is no longer valid.

It is also a good idea to give the person a receipt to prove the sale of the item.

Engraving serves two purposes. Firstly, engraving or marking your rigs makes them less attractive to offenders, since it is more difficult for them to resell them. Pawnbrokers will verify that the engraving on the equipment is the same as the driver's licence of the person trying to sell it; otherwise they will call the police immediately. Secondly, if your rig is stolen and later recovered by police, it is much easier to return it to you. Police recover thousands of stolen items annually but unfortunately a large amount of this property cannot be returned to the owners since it cannot be identified.

Where do I get an engraving tool?

There are several low-cost engraving tools obtainable from electronic and hardware shops. However, if you cannot afford one or simply do not want to spend that money,

you can borrow an engraving tool from NSW Police free of charge. Yes! We can lend you one at no cost.

There is a Crime Prevention Officer (CPO) at each of the 80 Local Area Commands across NSW, you can call your local police station and ask your CPO for an engraving tool, he or she will be more than happy to assist you (Picture 2).

Make an inventory

Another useful tip is to have an inventory of all equipment you own. When making the list you should include brands, models and serial numbers. It is also important to include the price of the items. If you make the list on your computer, print it (in case your computer also gets stolen) and ensure this information is secured for future reference. If you are unfortunate enough to be burgled, having an inventory will enable you to identify what is missing and assist police by giving a full description of the missing



Photo 1. Engraving your equipment

This article refers to protection in general. While NSW programs are specifically described, all states have similar programs. For local information, contact your local Police Community Liaison Officer or the Neighbourhood Watch local group. Phone numbers should be in the phone book. Ed



Photo 2: CPO at Fairfield Police Station assisting a client on how to use the engraving tool.

property. A sample of such an inventory is shown in Figure 1.

If for any reason your equipment cannot be engraved, they should be videotaped, photographed or marked with an ultra-violet pen. This marking is only visible under an ultra-violet black light.

You can also take advantage of the Property Safe Project, designed to reduce break and enters and stealing offences. NSW Police in conjunction with the Daily Telegraph and NRMA Home

public to engrave personal items and record the details on the brochure that is then stored in a secure place. It has a key holder information section, which you have to fill out and sent to the local police station for registration.

A sample of the brochure is shown in Figures 2 and 3.

In the event of a theft, you would present the brochure to your local police command and assist in the identification and recovery of the stolen goods.

BRAND	MODEL	SERIAL NO.	DESCRIPTION	DATE OF PURCHASE	PRICE

Figure 1



Tips for securing your home

- 4. If you are unable to make out a name, place it in a temporary file as a "known good" until you can determine what it is.
 - 5. Please print out all the tags on Tuesday, Wednesday, Thursday and Friday evenings in full length (approx. 1000 lines).
 - 6. All entries must be checked over at least twice before you turn them in.
 - 7. Please consider the following:
 - a) Print out all names in alphabetical order.
 - b) Print out all names in reverse order.
 - 8. If possible, enter a long or short play plus the author's name in the first word naming position.
 - 9. Please enter programs in two parts, although a lead-in lead-out is acceptable.
 - 10. Please do not use "P" for "Program".



**Property
Safe**

Your Personal Property Register



Figure 2

Figure 3

A high power RF attenuator

Ron Sanders VK2WB
PO Box 439, KIAMA NSW 2533

It is sometimes useful to be able to use low-level instruments on high power RF equipment. A typical use could be to observe the output signal on a cathode ray oscilloscope (CRO) while the transmitter is still operating. Normal resistive attenuators are usually not suitable because of power dissipation requirements. This article will show a very low loss method of sampling the output of an amateur transmitter, which may be operating at relatively high power levels.

Principle of operation

Use is made of the impedance transformation of a transformer between primary and secondary windings. Refer to figure 1. If the secondary winding has m turns and the primary side n turns, then the impedance ratio is $(m/n)^2$. If we terminate the secondary winding with 50Ω ($R_{\text{secondary}}$) the primary (R_{primary}) will appear to be $50(m/n)^2$ ohm. Suppose the primary is just 1 turn and the secondary is 10 turns. The primary impedance will be $50/10^2$, which is 0.5Ω . If we had 20 turns on the secondary the ratio would be $1/400$ and the primary impedance would be 0.125Ω .

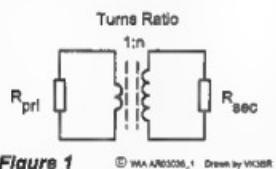


Figure 1

© VAA AR50001_1 Drawn by VK2WB

The transformer is actually a current transformer, which is used in many power line applications but specially chosen for RF use. A toroid core has a unique characteristic when used as a current sensing transformer. If the conductor carrying the main current passes through the hole in the core, it forms a single turn winding on the core. Assuming that the transformer is 100% efficient the power in the primary and secondary circuits will be equal. Consider the case with a 10-turn secondary and 1 ampere of RF flowing into the load (50Ω). The power consumed in the 0.5Ω reflected in the primary will be (i^2R) which is 0.5 watt. Now the reduction in power from 50

watt to 0.5 watt is 100:1 which when expressed in decibels is 20 dB attenuation. Following the same logic you can see that a twenty turn secondary produces 0.125 watt dissipation and represents a reduction from 50 watt to 0.125 watt which is a ratio of 400:1 or 26 dB attenuation.

NB: You can see that if the secondary is not terminated a very high impedance can be reflected into the primary. If you leave the transformer permanently in line you should always have a 50Ω (or short circuit) termination on the secondary port. Alternatively you could include a 10 dB resistive attenuator permanently in ahead of the low level output.

Circuit

Figure 2A shows an arrangement where the output of a transmitter is passed through a toroidal core forming a single turn and a secondary winding on the core has say 10 turns and is terminated in 50Ω . The series impedance on the transmitter output will appear as 0.5Ω due to the impedance transformation as mentioned previously. The equivalent circuit is shown in figure 2b. The transmitter normally requires a 50Ω

load for correct matching. It will now see a load of 50.5Ω , which for practical purposes is not a significant change. With a 20-turn secondary the series impedance on the transmitter output will appear, as 0.125Ω and actual load seen by the transmitter will be 50.125Ω , which is even less significant. Of course the system could be scaled down for 75Ω if necessary. Note that the operation is bi-directional unlike the VSWR meter, so that the RF input and output ports are interchangeable.

Practical considerations

The transformer core must be chosen for low loss over the range of frequencies required, typically 1.8 - 30 MHz. In addition the core must not approach magnetic saturation under the conditions of use. This means that the maximum flux density in the core must be reduced as the frequency is increased. This is normally controlled by choosing a core of sufficient size for the application. Toroid ferrite cores made from material with permeability of 850 are suitable for 1.8 - 30 MHz. Cores of 13 mm diameter (FT-50-43, FT-50A-43) are satisfactory for up to our legal limit.

To keep feedline impedance

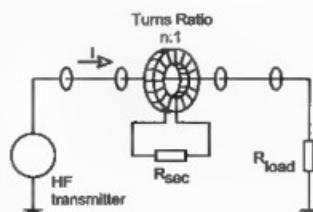


Figure 2a

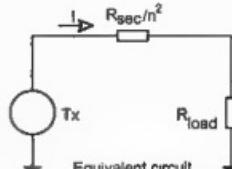


Figure 2b

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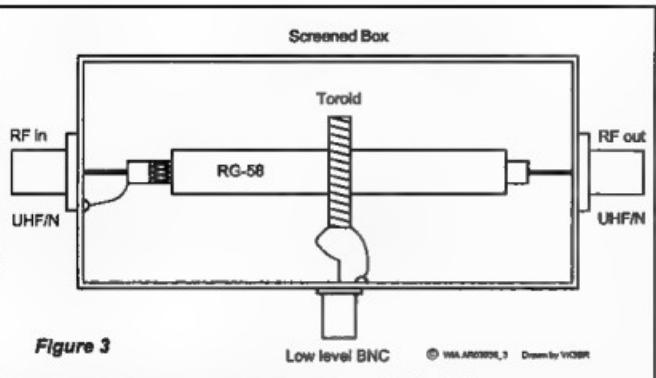


Figure 3

© WIA AR00006_3 Drawn by VQDR

disturbance to a minimum, the primary winding should be a short piece of coax (RG-58) with the screen grounded at one end only so that the shield provides a Faraday screen to prevent capacitive coupling to the secondary winding. The length of coax need not exceed 50 mm.

Place a dab of adhesive to secure the toroid on to the coax once you have completed construction. See Fig. 3.

The secondary winding is made from 0.3 - 0.5 mm enamelled copper wire and should not be so large as to approach self resonance at the highest operating

frequency. Use a multi-filar winding if necessary.

The circuit should be housed in a small metal enclosure with coaxial connectors for each of the 3 ports. It is a good idea to use a BNC connector for the low-level port and either UHF or N connectors for the other ports. This way there is no chance of connecting high power to the low level port.

In practice the $50\ \Omega$ load on the secondary would be a $50\ \Omega$ variable resistive attenuator feeding the measuring instrument. In that case, note that the attenuator must be capable handling the power, which should not be allowed to exceed 0.5 watt in most cases. As shown above, the dissipation can be controlled by choosing the number of turns on the secondary winding. When running the legal power limit the current in the secondary would need 32 turns to keep the power dissipation below $0.5\ \Omega$. This would produce approx. 30 dB attenuation.

Conclusions

A cheap and simple wideband attenuator for HF frequencies can be constructed using easily obtainable parts. The amount of attenuation required can be calculated and implemented by changing the secondary turns on the sensing transformer. I suggest that you use a turns ratio which gives a recognisable dB figure; e.g. 20 dB, 26 dB, 30 dB. Uses include, where a low level sample of a high power RF signal is required, such as a spectrum analyser or transmission monitor.

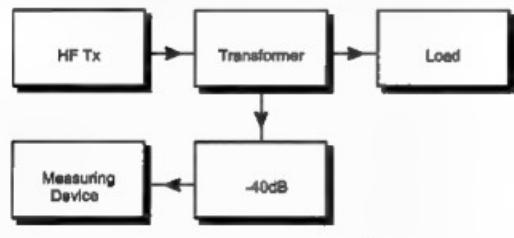


Figure 4

© WIA AR00006_4 Drawn by VQDR

Wanted:

copy of a few pages from *RF Components and Circuits* by Joe Carr.

I am interested in an oscillator circuit with an LM6511 device, SMD type - a direct at apparently better (speed wise) replacement for the LM311.

The first reference I can find that suggested using a "Frequency Shift Oscillator" connected to a frequency counter to measure C and L at least in the "HAM" literature is Dr. Hegewald in "Funkamateur" in 1988. I am

interested in looking at page 342 or thereabouts in the book by the late Joe Carr, "RF Components and Circuits." Apparently the AADE LM311 Oscillator is described there and from what I have been told referenced to someone else,

but I need to see the pages to confirm this. I do not have this book or can get access to a copy locally, so if you could check this for me I would be grateful.

Dr Gary S. Evans
argentummag@hotmail.com

Ron Smith VK4AGS
Federal Education Co-ordinator

Challenge or chaos?

Amateur radio in Australia, as well as other places around the world, is at a time of change. Locally there are changes in technology, changes in modes, changes in regulations, changes in the WIA structure, and changes in education methods, to name but a few. There is much debate about whether the changes are for good or otherwise.

Change is inevitable in life. It is natural and necessary. It is not automatic, though. Studies in psychology show that on the whole people are uncomfortable about change. So continuing the theme of last month about educating ourselves being fundamental to amateur radio, it is worth at this time to have a look at the change process and people's reactions to change.

Regardless of where people stand on a continuum ranging from a strong supporter of proposed changes to strongly against the changes, (perhaps somewhere in-between), all people go through six distinct stages in response to change. What differs is the depth reached of each stage, and length of time spent in each stage.

Stage 1. Shock

This is usually the first reaction. People commonly feel shut out of the change process. Some supporters will feel shock that the changes were even proposed or shock at the reactions of others. Opponents will also feel shock at the nature of the proposed changes. This is usually a short time, but importantly makes 'immediate knee-jerk' responses to changes inaccurate..

Stage 2. Retreat

Proposers of the changes feel that maybe they have gone too far or start to see good things in the old ideas. Opponents retreat, usually deeply, into past ideas and commonly start to propose alternatives which are usually the old ideas dressed up in different words or in some other way. There is an element of doubt and at the same time some respond by searching. Emotions are starting to run high which leads automatically to Stage 3.

Stage 3. Reaction

This is where supporters and opponents usually engage in inappropriate behaviour. Arguments rage, sometimes in media where they usually should not be. Polarisation is common. This is the time for letters to editors or politicians. This is the most inaccurate time to gauge the response to change but in view of the 'noise' and inappropriate behaviour, managers of change commonly intervene here or use the data from here for future decisions as much as available, but it is inaccurate.

Stage 4. Acceptance

This is still a negative stage. The changes are accepted but there is usually no enthusiasm for them. Both sides have run out of energy or been hurt during Stage 3. Some questions still remain.

Stage 5. Exploration

In this stage all parties start to explore the possibilities of the changes. As time progresses the changes expand and the features are confirmed by most. Fine tuning is starting to be suggested and maybe even accepted. However, this is not the time for good planning for the future either. It is a restricting time, but positive feelings are appearing.

Stage 6. Challenge

Changes do issue challenges. In this stage the potential of the changes is acknowledged and the main feature of the changes start to have a real impact. Here also fine tuning and reviews take place but they are more visionary, less emotional, and well considered, but the impetus of the changes is not reversed.

Understanding the change process is important for all of us. It does not matter

whether we are proponents or opponents of change. Further, it does not matter whether we are charged with the administration of change or 'on the receiving end'. If we don't appreciate the six stages and allow the change process to work its course we usually end up with a low quality system.

One of the big mistakes that administrators and managers responsible for change make is to intervene and make further changes, usually backwards to 'keep the peace', at Stage 3. This has two major problems. One is this response starts the change process over again and keeps people in the stages where there is controversy and high emotions, not very effective at 'keeping the peace'. The second problem is that the change usually does not happen very effectively as the timing is all wrong, and mediocrity usually results.

Amateur radio has so much to offer the current participants and the future participants. Like much of life, it cannot operate in a changeless environment. The challenge for us is to educate ourselves in change, understand what we see as the change process works through, and importantly not to react in a manner and at a time which work negatively.

If I use a baby analogy of badly mixed metaphors. We can change the baby to a clean and comfortable one, removing the smelly or unwanted things, or we can throw the baby out with the bath water.



**Proposed new WIA
Constitution see page 25**

In Charlie's way

A short story about a ham, his mates and the CW receiving exam

ROSS FRASER VICKIEN

Part 1 – *Charlie's torment*

COLIN WATTS sat staring at his desk and the old Kenwood high-frequency (HF) transceiver radio (sometimes impolitely referred to as a 'boat anchor') that sat silently just in front of him. Colin is a keen radio amateur and radio enthusiast but he was reluctant to turn his radio on this morning. His friend and fellow amateur, Charlie, had organised a skip for seven o'clock with Colin and some others but Colin wasn't keen to talk. Colin and Charlie normally had a QSO in the morning but Charlie was keen to let everyone know, especially Colin, about his exam result. Colin knew that Charlie would have news about the radio exam that he had just sat and he didn't want his friend to have failed. Charlie had sat for the morse code receiving exam four times previously and had been unsuccessful each time. Sometimes Charlie had got half way through his exam and the code seemed to take on an erratic and overwhelming nature. All he could do was just sit there, not writing just staring at his desk and partly filled out exam form and wishing he was somewhere else.

Colin wished he could make it easier for Charlie but he seemed to take each failure pretty hard. Colin has his 'full-call', or unrestricted, ham radio licence and Charlie was keen (desperate would be a better way of expressing it!) to get his. Quite a few years earlier Charlie had passed his morse code sending exam and was sometimes a bit annoyed that it had taken so long to get his full call. He knew he'd get it one day but he seemed to worry about it too much.

The radio desk and the Kenwood TS-520S that Colin had been staring at blankly started to come into focus as though it had just materialised in front of him. He reached up and switched the radio on and immediately could hear a

QSO a few kilohertz up the band. Colin adjusted the dial to tune in the stations and could hear Steve and George talking to each other. Steve was talking about his dog, Raptor, and how Raptor likes to chase birds and run around like mad, barking his head off but never seeming to catch any. Steve was sort of complaining but he loved talking about his dog and didn't really mind his annoying habits.

Colin flicked the heater switch on the '520S so he could join in on the chat and waited a few minutes before tuning up his radio. Colin was just about to wander off to the kitchen to make a cup of coffee when he heard Charlie break in to the QSO with Steve and George.

"That dog thinks it's a bleeding bird, Steve, that's the trouble with it," said Charlie in his typical stirring manner.

Steve was always quick to give as good as he got and replied by saying: "I'm surprised that you're up at this hour Charlie. Did the birds wake you?"

Colin decided that his coffee could wait so he sat down and waited for the right moment before breaking in to the chat. George was more of a gentle commentator than a stirrer so, when it was his turn to talk, said:

"If that dog of Steve's was barking round here at sparrow fart he'd be as popular as a fart in a space-suit". George liked expressing himself in a manner that allowed for breaking wind to be incorporated in the conversation at least once every morning. George continued: "But anyway, how'd you go in the exam Charlie?"

There was a pause and Colin breathed in deeply. Charlie spoke quietly: "Well it was the best result so far," said Charlie obviously wanting to be a bit dramatic. Colin hoped the news would be good. "Aaaand" Steve said in a sort-of-agitated

manner wanting to hear the full story. "I didn't get it" Charlie said straight to the point.

Everyone offered sympathy to Charlie, as they knew how much it meant to him to pass the exam. "I'm sorry to hear that," said George who'd sat eight times for the same exam before he finally got it.

Even Steve offered his best wishes and encouraging words to Charlie. Colin knew only too well how much this setback would mean to Charlie. He silently vowed to do what he could to help Charlie and boost his confidence. "Let's face it," he thought to himself, many people had struggled with the exam and got through eventually. Eventually being the operative word, thought Colin as he smiled to himself remembering his own struggles.

"Oh well I'll just have to stay on eighty metres for a bit longer" said Charlie with a hint of pain in his voice, but then continued with "but I'll get it next time".

Everyone on the net offered support and encouragement to Charlie. Many had had similar struggles with the diddy-dahs so sympathised with Charlie's situation. He thanked everyone for their encouragement and kind words and then signed off the net.

Colin wished him well and said he'd catch up with him tomorrow morning. He felt sad for his friend and wanted to help him to feel better about the situation. Failing a morse exam is not the end of the world. He also wanted to help Charlie to get ready for the next exam. Colin knew that his friend could copy CW without any great trouble - except when he was in an exam. It seemed that Charlie suffered from 'exam fright' and also sometimes lacked faith in his own abilities.

To be continued – Part 2 next month

Know your secondhand equipment

Ron Fisher VK3OM
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If you think that heading sounds familiar, you're right. Back in the middle 1980s I wrote a series for *Amateur Radio* to look at a range of equipment that might have turned up in hamfests at that time. A lot of that same equipment is still listed in advertisements. Which just shows how reliable that early equipment was, and still is.

However, times change and a lot of equipment has arrived on the market in the intervening years. Times have also changed with many amateurs now able to operate on the HF bands who were not permitted to in those far off days.

I have decided to start off this new series, therefore, with equipment at the lower price end of the range, the type of equipment that might be ideal for a "Z" call to become familiar with the HF bands before spending big money on a newer transceiver.

The Kenwood TS-520 and TS-520S HF Transceivers

It's easy to get these two mixed up, but the "S" on the 520S makes a very major improvement in performance.

However, let's look at the TS-520 first. Released on the Australian market in the latter part of 1974, it was Kenwood's answer to the very popular FT-101 series. It covered the usual HF bands of 80 through to 10 metres. There were no WARC bands in those days, so if you are looking for operation there, look further on. The circuit was solid state up to the transmitter final and driver stages that used a 12BY7 and a pair of 6146s in the final. A double conversion circuit was used with a first IF around 8.6 MHz and the second IF was at 3.395 MHz using a 2.8 kHz bandwidth crystal filter. An optional filter was available for CW.

In terms of performance, I have always considered that the 520 was better than the FT-101B which was the contemporary Yaesu offering. Solid state receiver front ends of this time left a bit to be desired. Receiver overload with



TS520S transceiver with the DG-5 digital display unit, and partial views of the external view and extension speaker.

strong signals was a common problem. In this regard, the 520 was the better of two, but still not perfect. Both transmit and receive audio quality were very superior to Yaesu and possibly this started the old saying that Kenwood transceivers sound better.

Some of the things that our new-to-HF-amateur will have to get used to are first the analogue frequency readout. If you want reasonably accurate frequency read-out you will need some practice in using the calibrator. Also, of course, tuning up the final stage needs a degree of skill. But more about this later on.

A range of optional matching accessories was available at the time. These include an external VFO for split

frequency operation, a matching speaker and, slightly later, a two metre transverter.

When new, the TS-520 sold for \$550. Secondhand value today for a clean unit in good-working order would be about \$175. However, after thirty years of use, finding a good one is not easy. So, on to the TS-520S that is easier to find and provides somewhat better performance.

The TS-520S

This updated version of the original TS520 was released on the Australian market in late 1977. The price was \$650. Appearance was very similar to the old model, but with the dial area improved for better readability. The 160 metre

I hope to continue this series on a bimonthly basis. If you would like to see any particular piece of equipment reviewed, please let me know.

band was added but the DC power supply, which was a standard feature on the old model, was now an optional extra. The general receiver performance was much better. Available as an option was the DG-5 digital read-out, which was a very handy unit also able to be used as a 40 MHz counter. When used with the TS-520 it gave accurate readout to 100 Hz. Other options were an external VFO, and an extension speaker of excellent quality.

Secondhand value today is between \$175 and around \$250 for one in top condition. The matching DG-5 readout is very hard to find these days and I would suggest \$100 would be a fair price to pay for one in very good condition.

Finally, back to tuning up the final amplifier stage of valve transceivers. It is essential that this is done quickly. My method is:

1. Set the drive or pre-selector control for maximum receiver sensitivity.
2. Set the load control to the mid position
3. Select the tune or CW mode.

4. Set the final tuning to the centre of the band chosen.
5. Increase drive and rotate the final tune and load controls for maximum power output as indicated on your SWR or power output meter.

All of this should take no more than about five seconds. If the finals in your

TS520 or TS520S are in good order you should see at least 120 watt carrier power which will equate to about 140 watt PEP.

Both of these transceivers make an excellent start for a newcomer to HF operation.

UA2 QSL Bureau

On the 8th December 2003, during UA2 annual meeting, we decided to start our own incoming QSL bureau.

This means, we stop getting incoming QSL cards from SRR QSL Bureau in Moscow (P.O.Box 88). The new address is: UA2 QSL Bureau, ROSTO Technical School, ul.Ozynornaya 31, Kaliningrad, 236029, Russia.

Kindly please update your QSL bureau address book and from now on

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Thanks and 73,

Victor Loginov, UA2FM
UA2 QSL Bureau official
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1300MHz
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FT-817 compact fast charger

In QST for November 2003, Phil Selas, AD5SX describes a compact fast charger for the battery pack in his FT-817.

Whilst the internal NiMH battery pack in the FT-817 can give several hours enjoyable operation, even at 5 watt, the subsequent 20 hours of charging time using the internal charger can be a little tedious. One part of the solution was to install the One Plug Power (OPP) by W4RT Electronics (www.w4rt.com). The OPP provides an 1800 mAh NiMH battery pack along with a new battery cover that includes a 2.1 mm x 5.5 mm charging jack. This jack allows the use of an external fast charger, without having to remove the batteries from the radio.

All that is needed now is a suitable fast charger. The FT-817 is part of a compact, portable kit, including all accessories. As most of the fast chargers available had mains input and therefore were too big and heavy to fit into this kit, a better solution was needed. Since 13.8 V dc was already available from the ac supply that was part of the kit, the charger could use this or any other source of 13.8 V as a source, making it much more compact.

Silent key

Dietmar (Don) Grigoleit
VK3NQ

Don died suddenly on Saturday 14th February 2004 at Loch Sport, Victoria. Don was first licensed many years ago and some ten years ago took over VK3NO on the death of a friend.

He had a number of regular skeds and when I was on holidays at Lake Sport, I spent many pleasant hours sitting in his shack listening to these skeds.

I am not a radio amateur so this is my only way of letting his friends know of Don's passing.

The compact charger is built around the Maxim MAX712/713, Fast-Charge Controller IC. Either MAX712 or 713 can be used with the NiMH batteries. These are very versatile ICs that permit fast charging of many different types of battery packs (NiCd, NiMH) with many different voltages. In this case, the 8 cell, 9.6 V NiMH battery-pack used in the FT-817 was of interest, which results in a very simple circuit.

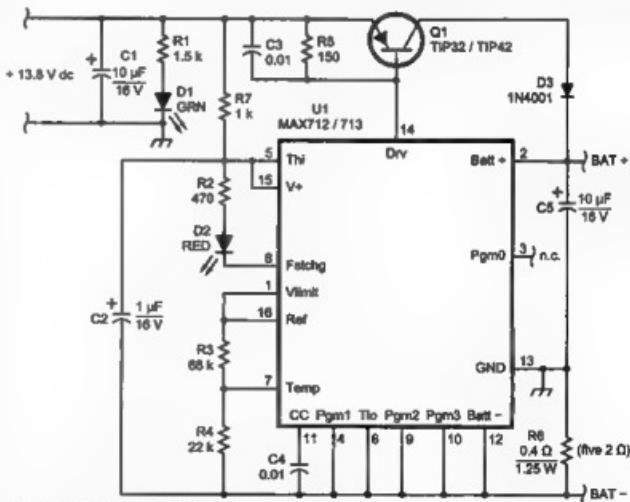
The circuit shows the final design. The fast charge current is about 600 mA, and it will charge a depleted pack in 3 to 4 hours. It is also designed for a time-out of 4.4 hours. This controller automatically senses when the battery is charged and switches to trickle. The green LED is just a 'power' indicator. The red LED is on during fast charge, and turns off when the charger is in the 'trickle' mode.

The MAX712/713 is available from

Farnell plus possibly some other suppliers around Australia. All other components should be available from the usual suppliers. All resistors are 1/4 W. You can download the IC data from the Maxim website (www.maxim-ic.com) for other charging conditions or number of batteries.

The entire charger was built into the smallest plastic enclosure possible, with a metal cover. Most of the parts are mounted on a piece of perforated board, using point to point wiring methods. The TIP32 transistor must be mounted to the metal cover to dissipate the heat during the high current charging. The enclosure has a 2.1 mm dc socket for the 13.8 V input. The output is on a flying lead with a 2.1 mm plug that plugs into the OPP 2.1 mm socket.

This charger can be also used with other battery packs, depending on how you may wish to adapt and access them.



Except as indicated, decimal values of capacitance are in microfarads (μ F); others are in picofarads (pF); resistances are in ohms; k = 1,000.

Solid-state those pilot lamps

Recent years have seen development and introduction of relatively inexpensive ultra bright white LEDs.

Phil Salas, AD5X in 'Solid State Those Pilot Lamps' (QST September 2003) describes his experiences in replacing the incandescent lamps in a number of the old style 'boat anchor' radio equipment.

The common types on lamps used in the old equipment used #44 or #47 pilot lamps that normally operate at voltages of about 6 V ac while consuming up to 250 mA each (1.5 watt). As well as these lamps having limited life, they are also often in hard to reach locations and the relatively high heat output of such lamps in confined spaces such as dials and meters contributes to their discolouration over a period of time.

AD5X notes that the prices of the ultra bright lamps have dropped significantly recently and can be up to three times brighter than the incandescent lamps found in the old radios. However, this light is directional and they have to face forward to achieve this brightness.

Most ultra bright LEDs have a normal operating current of about 20 mA. Remember that LEDs are diodes, so they rectify the ac voltage if being run on AC and that LED polarity doesn't matter. If being run on dc, polarity does matter and the anode of the diode has to go to the positive side of the supply voltage.

The value of the series resistor to provide suitable diode current depends on the colour of the LED, if you wish to use other than white. Suitable resistor (R) values for 20 mA/6.3V ac are: White (4V) 82 ohm; Green (3V) 120 ohm; Amber (3V) 120 ohm; Blue (3V) 120 ohm; Red (2V) 160 ohm. If the LED is going to be run on DC, use Ohms law to calculate the correct value of R.

If the LEDs are for retrofitting into old equipment, it is easiest to build the resistor LED combination into old discarded lamp bases, which can then directly replace the old lamps.

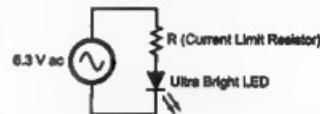
AD5X prepares the lamp base as follows:

- Put on safety glasses

- Wrap the pilot lamp in a small plastic sandwich bag and gently crush the glass part with pliers
- Using the pliers, gently squeeze and rotate the base. This should break the remainder of the glass and cement in the base. When complete, ensure that the base is as round as possible.
- Shake out the glass, and then use a solder sucker or wick to remove the solder from the tip of the base.
- Using needle nose pliers, pull the remaining pieces of bulb and wiring out of the base. If necessary, use the solder sucker or wick to clear out any remaining solder.

Using 1/4 W resistor and a 3000 mcd white LED, the new lamp is assembled as follows:

- Cut one lead of the resistor and one lead of the LED to 3mm.
- Overlap these short leads and solder together.
- Bend the remaining LED lead over and up.



- Insert the long resistor lead through the hole in the base until the body of the resistor bottoms out on the base.
- Solder the resistor lead in place.
- Solder the bent up lead of the LED to the side of the lamp base.
- Optionally, fill the lamp base with Epoxy or hot glue to give it some stability.
- Clip off excess lead lengths.

Fitting the LED decreases current drain by at least a factor of ten, and significantly increases reliability. In most cases, the light output will also be noticeably higher.

Suitable LEDs should be available from all of the usual suppliers in Australia.

Can you help?

Envelopes with stamps from East Timor

Michael Kalka, P.O. Box 866, Tullamarine, 3043 wrote to me recently asking assistance in his search for whole covers or envelopes with stamps from the UNTAET period in East Timor April 29th 2000 to May 20th 2002.

Apparently only two stamp denominations were issued in this

time and they are hard to find. He was wondering if any Amateurs had received correspondence, (possibly QSL cards) from East Timor during this period. If they still had the envelopes and were willing to part with them Michael would be delighted to hear from them and negotiate a purchase.

Colwyn VK5UE Editor

Just how old is the direct conversion receiver?

Steve Mahony VK5AIM

The QRP enthusiast has adopted the direct conversion receiver as his/her pet! With the advent of the mixer IC - most recently the NE602 - along with suitable audio ICs, this small, simple receiver requiring little electrical power has become very popular.

An article in *Wireless World*, June 1995, by Tom O'Dell makes interesting radio (wireless) history reading. Under the title "Whose Heterodyne?" he discusses and describes attempts by several experimenters to improve 'wireless reception' at the turn of the century. John Erskine-Murray is credited with first use of the term 'heterodyne'. Professor R. A. Fessenden had patented an electrodynamic telephone receiver in 1913. The patent describes the idea of producing a beat frequency, but from the description it is unlikely that it would work at radio frequencies!

Rudolph Goldschmidt of Berlin submitted a patent for a mechanical (yes, mechanical!) high frequency alternator mixer in 1909. According to the circuit the CW signal was fed from the aerial (not an antenna) to an input circuit, L-C tuned to the desired frequency F_s . The signal passed to a 'sound wheel' or commutator, similar to that in a DC motor, of 800 segments running at 3,750 rpm. A pair of headphones were connected from the opposite contact of the commutator. See Fig. 1 "Mechanical Mixer".

The action of the commutator as a mixer is explained in the following way. F_o is the oscillator frequency = number of switching events = $3750 \text{ rpm} \times 800 = 3,000,000 \text{ per minute}$ (50 kHz). If F_o equals F_s signal frequency, then nothing would be heard in the headphones. See the chart marked " $F_o = F_s$ NO AUDIO OUTPUT". But if the speed of the commutator was increased or decreased, then a 'beat' or difference frequency would be heard. See lower chart, marked " $F_s - F_o = \text{AUDIO OUTPUT FREQUENCY}$ ", where some significant parts of one audio output cycle are shown.

A Direct Conversion Receiver! Remember, we then had CW on a very low frequency, at kHz rather than MHz.

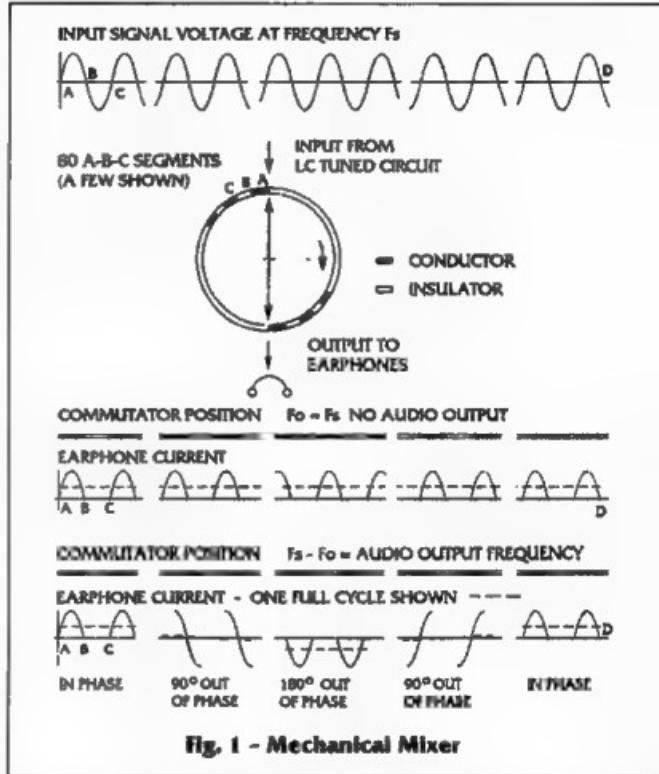


Fig. 1 - Mechanical Mixer

Remember also that we had mechanical rectifiers in the form of commutators and vibrating contacts long before we had solid state rectifiers.

A little later, Mr. Goldschmidt's system was modified to use a crystal detector as a mixer.

At about this time the Navies of the world were becoming very interested in this 'wireless' so as to be able to communicate with their ships at sea. Up

to that time, once a ship was out there on the deep blue sea, the crew were 'on their own'!

In 1913 the American Navy carried out some experiments to communicate with the vessel USS Salem on its voyage across the Atlantic, with 35 kW arc and 100 kW rotary spark transmitters located at Arlington in Virginia. On board the Salem were installed three different types of receivers for comparison testing.

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On board the US vessel as an observer was an English Naval Officer, Captain Willis RN from HMS Vernon.

Captain Willis' report says that the Heterodyne receiver was a crystal receiver with an oscillator loosely coupled to the receiver.

This Local Oscillator had to be placed as far away from the receiver as possible. Some difficulty was experienced due to the separation - the person tuning the oscillator could not hear the result at the receiver. Imagine having someone tuning the VFO 15 to 20 ft away from the receiver! Many hand signals would have to be given by the listener: 'up a bit', 'down a bit', 'too far' and a final nod of the head when it was correct!

According to Captain Willis this oscillator was a 100 W rotary arc! A bit like a Regenerative Receiver - you would bear the rec/osc better than the transmitter!

In his report to the Royal Navy Captain Willis said that he thought the system might work if the local oscillator was enclosed in a lead-lined room, to control the amount of oscillation mixed into the detector. Who amongst you put the VFO

for a DC Receiver in a tin box?

The article goes on to say that more experiments were carried out with the Heterodyne Receiver in the USA, UK and Europe, but the invention of the thermionic valve, diode and triode with its amplification enabled the TRF receiver, along with the valve oscillator for the transmitter, to be built and left the heterodyne behind on the path of technical development of radio.

It took Mr. Armstrong, who probably obtained and studied all of this information, to come up with the 'superheterodyne' we all know today.

So when you wire up your NE602 IC and associated components, you are not doing something new! Think of those early Amateurs who did it first, almost a century ago!

Reference

Wireless World 'Whose Heterodyne?' T. O'Dell June 1995 p.498.

Reprinted from *Lo-Key* #52 December 1996

Harry Angel Memorial Sprint

Friday 23 April, 2004

see page 50 this issue

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The bad news first

The results of the ALARA Contest in August were so bad (only 6 logs were submitted though more people actually participated) the committee decided not to award the usual certificates. The Florence McKenzie Trophy was won convincingly by Pat VK3OZ – for the third year in a row!! Pat also had the highest overall score last year for which she was awarded a certificate. Well done, Pat. Perhaps we knew something when we physically gave the Trophy to Pat, in Murray Bridge in 2002.

The Florence McKenzie trophy is rather large so the usual practice has

been to send a certificate with a photo of the trophy, rather than the actual trophy, to the winner. For many years the actual trophy was on show in a glass case at the Burley Griffin Building in Adelaide. However, with the amalgamation of district councils which took place several years ago, the WIA(SANT) lost the Burley Griffin Building as a headquarters. Until a new permanent home is found we are glad to know the trophy is on display in the home of one of the most successful winners.

Other than the Florence McKenzie

Trophy and the winning score certificate, only one other certificate was awarded, to Mavis VK3KS for her all CW score. We were pleased to hear Mavis participating in the ALARA Contest again. For many years, Mavis and her OM Ivor VK3XB were very regular participants but it is more difficult for Mavis to operate her radio in her current QTH.

HINT: If we do not have a better response all round next year the ALARA Contest may cease to be. This would be a shame as it has been running since 1981.

...and the good news

Well, for most of Australia the drought has broken – with a vengeance if the pictures shown on TV recently of the downpour in Brisbane were anything to go by. Summer is here which always makes us feel more cheerful and, so far, there have not been any bad bushfires. (Hope this doesn't jinx us). There are some new voices on the HF bands now that CW is no longer required as an examination subject.

Christmas

Some of us had more interesting than usual Christmases. Bev VK6DE went on a cruise to Antarctica for her Christmas treat. Dot VK2DB had a sad Christmas though. One son, with his wife and daughter (Dot's first grandchild) moved to VK4 on Christmas Eve and another son started packing up his room preparatory to moving out, on Boxing Day. Not a Christmas Dot (or John) will remember with joy.

For your correspondent Christmas was just the lead-up to the celebration of her Golden Wedding at the end of January. For a number of VK5 amateurs including Jeanne VK5JQ Christmas was only the prelude to operating the radio room for the 5,000 scouts attending the Jamboree in VK5. If you heard VK5BP during January they were probably there.

Lunchtime problems

In VK3 where they decided to reduce the number of luncheons to occur only on alternate months, January presented a problem. When a couple of the YLs who travel a long way to attend, decided not to go to the city that day, several other regulars agreed to 'give it a miss' this time. However, there are one or two VK3 YLs who like to meet the others whenever they are in Melbourne. One of these planned to come in January but when she heard that there was not to be a meeting, she was disappointed but understood. How do we all let each other know what we are planning? Somehow the 'communicators' do not always communicate.

In VK5 the problem has been different. The venue used for the last three or four years has changed hands and the service is not as satisfactory as it was. So a new venue was chosen. There was a rush to inform the regulars of the change and a couple of us waited at the old venue – just in case. All OK. The new venue was also OK as far as food and cost were concerned BUT then there was a

glitch, as a consequence of which we decided to change venues once more. Let us hope that the February luncheon will be just right! We will meet on 13th February at the "Duke of York Hotel" in Currie Street.

In VK6 they do not have any problems. They still meet on the LAST THURSDAY of each month (except December) in the same hotel in North Perth.

Please get in touch with the State Rep or one of the local YLs if you are going to be in any capital city (or in some of the country towns where we are represented). It is often possible to arrange a lunch or visit. We would love to welcome you and show you "why we live where we live" to quote a well known radio program.



A VK5 ALARA Luncheon

Adelaide Hills Amateur Radio Society

The Christmas Dinner was enjoyed by all. There were about 60 present. The highlight of the evening was the announcement of the "AHARS Amateur of the Year". This year the recipient, John VK5EMI, received the inaugural Denis Grieg Shield as a permanent reminder of the honour.

The Denis Grieg Shield was presented to John by Denis' widow, Rosalind, in memory of Denis VK5PC who became an SK during 2003, and is to be an annual award. The names are to be engraved on the Shield and the recipient to have a replica.



John VK5EMI, winner of the inaugural Denis Grieg Shield for AHARS Amateur of the Year

In January, as we cannot use the school hall, we meet at the home of one of the members. This year we went to Myponga, to the home of two members who joined in 2003, Robin VK5ATT and Carol VK5KEY. It was rather cooler than usual for January in VK5 but this did not dampen the enjoyment of those present. The

company was good, the barbecue was good and the view (360°) was magnificent. The house overlooks one of our beautiful reservoirs and is high enough that you can see the sea in one direction and the rolling hills in the other.

Some of us went for an invigorating walk. As you go downhill in all directions from the house, you finish the walk coming up hill. Definitely invigorating! Others inspected the contents of the very large shed or the radio shack. There was plenty to see everywhere. Thanks to Robin and Carol for an enjoyable evening.

Our President, Geoff VK5TY, had a special end-of-January. On 24th he



"Australia Day acknowledgement for Geoff Taylor VK5TY, who was named as "Citizen of the Year" for the City of Unley, for his efforts over more than 40 years in teaching amateur radio courses. Geoff is on the right."

celebrated his 50th Wedding Anniversary with family and friends, then on 28th he was presented with a certificate as "Citizen of the Year" for the District of Unley in which he has lived for over 70 years. As this Australia Day ceremony was close to the date of the party some of his interstate family were able to be there, along with a number of friends from within the amateur community.

As this recognition was largely due to Geoff's activities within amateur radio he feels that he represents all of us. Congratulations Geoff, from all your friends and from all the members of AHARS.

ALARA continued

Congratulations

Deb VK5JT had a book of poems published at the end of 2003. Deb has been studying and writing English for a number of years as has been reported here, previously. To have a book published is a very satisfying result of all the hard work.

We hope this is just the first of many books, Deb. Our sincere congratulations to you.

A sad occasion in North Queensland

In January 2004 Ann VK4MUM became an SK. She had been battling cancer for some time but eventually it won. Ann has been a stalwart of the Townsville ARC and a long time member of ALARA. She will be sadly missed. Our condolences to her family and friends.

Don't forget to apply for your QSL cards

If you made contact with VK9XYL or VK9CYL in October 2003 do send your QSL cards to the QSL manager, Gwen VK3DYL for confirmation. Gwen, Elizabeth VE7YL and June VK4SJ were disappointed to only make 4,000 contacts during their time on Christmas Island and Cocos Keeling Islands but the QSL cards will be valuable to you towards your DXCC Award, or just because they are unusual.

Give Gwen something to do.

Signor Marconi's Magic Box: How an amateur inventor defied scientists and began the radio revolution

Gavin Weightman (2003), Harper Collins, London.

ISBN 0-00-713005-8; 312pp. Hardback, A\$32.75

Dr John Dawes VK5BE

Aspects of the life of Guglielmo Marconi have featured in *Amateur Radio* in recent years – see Ken Matchett's (2002/2003, pp. 32, 33) article about the call sign 2MT used by Marconi's Wireless Telegraph Company from February 1922 to January 1923. A mini biography of Marconi by Wolf Harranth (OE1WHC) (translated from the German by Ken Matchett, VK3TL) also appeared in *Amateur Radio* (1999, pp. 12 -14). On page 15 in the same journal there is a one page extract from an article by Marconi that was published in the *London Magazine*, March 1902.

I have a QSL card in my collection from VK2IMD (International Marconi Day) confirming my contact on 23rd April 1994 on the 40 metre band with this station established to commemorate Marconi's achievements. The card especially celebrates the first direct wireless message transmitted from the United Kingdom to Australia on 22nd September 1912. Marconi transmitted the message himself for the Australian Prime Minister, Mr Billy Hughes, who was visiting his place of birth in Wales. As well many of us have built and used Marconi antennas for use on our high frequency bands. Orr and Cowan (1972, p. 92) describe the Marconi antenna as 'the simplest, least expensive and often most practical antenna for multi-band operation...'

So who was Guglielmo Marconi and why is he such an important figure in 20th Century history? Weightman's (2003) book is a substantial, sympathetic and gripping account of the brilliant and perhaps slightly eccentric Marconi. The book, of 44 lively chapters, also includes 16 pages of splendid historic photos of Marconi and key events in his life (25th April 1874 to 20th July 1937). The author begins his account of Marconi in 1896 as a 22 year old man travels with an older man to Toyne Hall in London. The older man, William Preece, was Chief Electrical Engineer of the British Post Office. He gave a public lecture while the younger man, Marconi, demonstrated his wireless telegraphy equipment. This early patronage of

Marconi helped establish his reputation in England. Preece was, however, sceptical of Marconi's use of Hertzian waves for telegraphy (p. 26), perhaps as a result of the Post Office's investment in extensive underground cabling for that purpose. Preece through his invitation to a German scientist, Professor Adolphus Slaby, to be present that evening unwittingly enabled the Germans to benefit from Marconi's work, just a little over a decade before the Great War.

Weightman is an established author with a number of books to his credit. He makes no claim to being a wireless enthusiast but he writes with humour and a sense of history. He points out that young people today who send text messages using mobile phones are using wireless technology – but that they were all beaten by Queen Victoria who received and responded to a text message on 8th August 1898 (p. xvii, p. 39). 'Very anxious to have cricket match between *Crescent* and Royal Yachts Officers. Please ask the Queen whether she would allow match to be played at Osborne. *Crescent* goes to Portsmouth Monday'. The message was sent from the Royal Yacht Osborne, off the Isle of Wight, to a receiving station in the grounds of Osborne House. 'Queen Victoria's reply was tapped back across the sea: "The Queen approves the match between the *Crescent* and the Royal Yachts Officers being played at Osborne".'

As a social worker/criminologist I

chuckled at Weightman's telling of the story of the first use of wireless telegraphy to bring about the arrest of a fugitive. The *Montrose* was crossing the Atlantic in July 1910. On board was a Mr Robinson (p. 231) who engaged the captain in conversation about the merits of wireless telegraphy. While on board Robinson was changing his appearance by shaving off his moustache and growing a beard. Mr Robinson was travelling with his son, aged 20, who was described as being in poor health and they were intending to travel to California to a more helpful climate.

Before departing from Antwerp, newspapers carried stories of a hunt for a murderer, an American, called Crippen (p. 231). Crippen had killed his wife previously telling his friends and acquaintances that she was unwell. He placed a notice in the newspapers that she had died in California. However, his friends became suspicious of Crippen and the police became involved. But before their investigation was complete Crippen disappeared. After a few days as seen the captain became suspicious of Crippen AKA Robinson. Wireless telegraphy was used to alert the authorities and he was arrested by a Canadian police officer upon arrival of the ship in Canada.

Weightman tells this story masterfully and builds the tension sentence after sentence. He concludes by advising that film director Alfred Hitchcock used

Continued on page 41



Looking Ahead

The WIA Federal Convention and Annual General Meeting will be held in Brisbane on 2nd, 3rd and 4th April 2004 and will consider a proposal to restructure the WIA.

Currently, every member is a member of a "division", representing a state or territory. The proposal is to convert the present federal body to a single national body, with every member becoming a member of that single national body.

That proposal suggests the adoption of a new Constitution to replace the current Memorandum and Articles of Association of the present federal body, The Wireless Institute of Australia.

The detail of the proposed Constitution is described in the Explanatory Memorandum.

The consent of the Victorian Attorney General is required to change the present Memorandum and Articles of Association of the WIA as proposed by the new Constitution and an application for that consent and the amendment of the Attorney

General's Licence has been lodged. When granted all aspects of the company will be subject to the Federal act, the Corporations Act, which is administered by the Australian Securities and Investments Commission, ASIC.

The draft "Ethics Policy" is a document that has been proposed for consideration and hopefully adoption by the new board of the national organisation if the Constitution is adopted.

Subject to the consent of the Victoria Attorney General, the Divisions will have the opportunity to adopt by a Special Resolution the new Constitution at the Federal Convention.

-- Yours in Amateur Radio,
Eric, VK1LK, WIA Federal President

This document contains three papers for consideration

Proposed Constitution of The Wireless Institute Of Australia

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Explanatory Memorandum

The purpose of this Memorandum is to provide an explanation of the proposed Constitution for the Wireless Institute of Australia.

It does not attempt to address every question that may arise, because that would make it a very long document indeed; rather it attempts to provide a general explanation of the approach adopted.

Draft Corporate Ethics Policy

As part of the process leading to the reorganisation of the Wireless Institute of Australia from a federal body to a single national body, it was recognised that the Board of the single larger body would face new challenges.

It was suggested that the board consider adopting this policy to assist its directors and officers, its employees and consultants and its many volunteers.

Corporations Act 2001

Constitution of The Wireless Institute Of Australia

A Company Limited by Guarantee

1	Name	16	Directors' Contracts
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15	Disqualification Of Directors	30	Changing This Constitution

1 Name

The name of the company is The Wireless Institute of Australia (the "Institute").

2 Capacity

Subject to the Corporations Act, the Institute has the legal capacity of a natural person including the capacity to exercise the powers set out in section 124 of the Corporations Act. It is the intention that this Constitution will not restrict or prohibit the exercise by the Institute of any of these powers.

3 Objects

The objects for which the Institute is established are:

- to promote, advance and represent in any way it thinks fit Amateur Radio and the interests of Radio Amateurs, and without limiting the generality of the forgoing,
- to protect and enhance the privileges of Radio Amateurs,
- to encourage an awareness of the value of Amateur Radio,
- to educate and encourage potential Radio Amateurs,
- to represent Radio Amateurs both nationally and internationally,
- to provide services for Radio Amateurs and those interested in Amateur Radio, and
- to do all other lawful things as are incidental or conducive to the attainment of these objects or any of them or which may be calculated to advance directly or indirectly the interests of the Institute.

4 Interpretation**4.1 Replaceable rules inapplicable**

The replaceable rules in the Corporations Act do not apply to the Institute unless repeated in this Constitution or specifically made applicable to the Institute by a provision of this Constitution.

4.2 Definitions

In this Constitution, unless the context otherwise requires:

"Affiliated Club" means any club or similar organisation admitted as an Affiliated Club in accordance with clause 5.11.

"Amateur Radio" includes all activities by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest and all other branches of knowledge and activity having application to amateur radio.

"Adoption Date" means the date that this Constitution is adopted.

"Business Day" means a day which is not a Saturday, Sunday or bank or public holiday in the state or territory in which the Institute's principal office is located.

"Board" means the board of Directors.

"Consent to Membership" means a notice to the Secretary agreeing to be bound by the Constitution in such form or forms as is determined by the Board from time to time, and including such other matters including but not limited to consents in accordance with privacy legislation and a resignation as member of a Division, as may be considered by the Board to be appropriate.

"Constitution" means this constitution as amended from time to time.

"Corporations Act" means the Corporations Act 2001 (Commonwealth).

"Director" means any person occupying the position of a director of the Institute by whatever name called.

"Directors" means the Directors for the time being or such number of them as have authority to act for the Institute.

"Division" means a corporation that was a member of the Institute on the Adoption Date.

"Institute" means The Wireless Institute of Australia.

"Members" means persons who are, or who are admitted as, members of the Institute pursuant to clause 5 but does not include any Affiliated Club.

"Office" means the registered office for the time being of the Institute.

"Provisional Member" means any person who on the Adoption Date is a member of a Division, whether as a voting member or not.

"Radio Amateurs" means persons interested in Amateur Radio.

"Register" means the Register of Members to be kept pursuant to the Corporations Act.

"Seal" means the Common Seal for the time being of the Institute.

"Secretary" means any person appointed to perform all or any of the duties of a secretary of the Institute and or any person appointed to act temporarily as such.

"Special Resolution" has the meaning given to that term by the Corporations Act.

4.3 Construction

In this Constitution unless the context otherwise requires:

- (a) words in the singular include the plural and vice versa;
- (b) any gender includes the other genders;
- (c) if a word or phrase is defined its other grammatical forms have corresponding meanings;
- (d) "includes" means includes without limitation;
- (e) a reference to:
 - (i) a person includes a partnership, joint venture, unincorporated association, corporation and a government or statutory body or authority;
 - (ii) any legislation includes subordinate legislation under it and includes that legislation and subordinate legislation as modified or replaced;
 - (iii) an obligation includes a warranty or representation and a reference to a failure to comply with an obligation includes a breach of warranty or representation;
 - (iv) a right includes a benefit, remedy, discretion or power;
 - (v) time is local time in the state or territory in which the Institute's principal office is located;
 - (vi) "S" or "dollars" is a reference to Australian currency;
 - (vii) writing includes any mode of representing or reproducing words in tangible and permanently visible form, and includes fax transmission;
- (f) if the date on or by which any act must be done under this document is not a Business Day, the act must be done on or by the next Business Day; and
- (g) where time is to be calculated by reference to a day or event, that day or the day of that event is excluded.

5 Members

5.1 Initial Members

The first Members will be:

- (a) the Divisions,
- (b) each of the persons who consents to be a Member of the Institute prior to the Adoption Date, and
- (c) each Provisional Member who after the Adoption Date and during such period as is set by the Board signs a Consent to Membership.

The first Members, other than the Divisions, whose membership of a Division accords with Honorary Life Membership shall be allocated that category of membership of the Institute, and all other first Members (whether or not a voting member of a Division) shall be ordinary Members of the Institute.

5.2 Further Members

- (a) The Institute may admit as a Member any person with an interest in Amateur Radio who applies for membership.
- (b) Every applicant for membership of the Institute (except the first Members and Non-Voting Membership) must be proposed by one and seconded by another Member.
- (c) The application for Membership (other than for Non-Voting Membership) must be:
 - (i) in writing signed by the applicant and his or her proposer and seconder; and
 - (ii) in the form including a Consent to Membership prescribed by the Board.
- (d) The application for Non-Voting Membership must be:
 - (i) in writing signed by the applicant; and
 - (ii) in the form including a Consent to Membership prescribed by the Board.

(e) As soon as is practical after the receipt of the application for Membership, the Directors must consider the application and decide whether or not to admit or reject the applicant for Membership. The Directors need not give reasons for rejecting any application.

5.3 Membership Categories

The Institute shall have the following categories of membership:

- (a) Ordinary Member
An ordinary Member is a duly elected and financial Member.
- (b) Honorary Life Member
The Board may in consideration of special services rendered to the Institute or Amateur Radio by a Member nominate the Member as an Honorary Life Member of the Institute. If the nomination is approved by a majority of the Members at a General Meeting entitled to vote at the meeting, the nominated Member shall be elected an Honorary Life Member. Any Honorary Life Member shall enjoy all the rights and privileges and be bound by the Constitution of the Institute as from time to time in force.

The Institute may have the following categories of membership:

- (c) Life Members
The Board may establish a category of Membership known as a Life Membership whereby any ordinary Member who having paid to the Institute, either by one or several payments within such period as is fixed by the Board, a sum of money which shall be decided by the Board at its absolute discretion (and any applicable Goods and Services Tax), shall, subject to the approval of the Board, be admitted as a Life Member of the Institute. Any Life Member shall not be required to pay to the Institute any further annual subscriptions but

notwithstanding such exemption shall enjoy all rights and privileges and be bound by the Constitution from time to time in force.

(d) Non-Voting Members

The Board may establish a category of Membership known as a Non-Voting Membership with such sub-categories with such privileges and at such rate of annual subscription as the Board shall determine from time to time. Non-Voting Members shall not be entitled to vote at any General Meeting of the Institute.

5.4 Cessation of membership

A person ceases to be a Member if the person:

- (a) resigns his or her Membership by written notice to the Directors; or
- (b) becomes an unfinancial member whose membership is terminated in accordance with clause 5.5; or
- (c) dies; or
- (d) becomes of unsound mind or a person who is or whose estate is liable to be dealt with in any way under a law relating to mental health; or
- (e) is expelled under clause 5.6; or
- (f) becomes an untraceable Member.

5.5 Unfinancial Members

A Member who has not paid his or her annual subscription, or any other fees or levies payable by the Member, within the time fixed by the Board, shall be deemed unfinancial and shall cease to be a Member if payment of the amount(s) in arrears is not made within 30 days of a final demand for payment of the arrears.

5.6 Cessation of Provisional Membership

Any Provisional Member who has not become a Member in accordance with clause 5.1 shall cease to be a Provisional Member at the end of the period fixed by the Board in accordance with clause 5.1(c).

5.7 Expulsion

- (a) The Board may by resolution expel a Member from the Institute if in its absolute discretion the Board decides that it is not in the best interests of the Institute for the person to remain a Member.
- (b) The Board must give the Member written notice of the meeting at which the resolution for his or her expulsion is proposed:
 - (i) stating the time, date and place of the meeting;
 - (ii) setting out the resolution and the grounds upon which it is based; and
 - (iii) informing the Member that he or she may attend the meeting and may give oral or written submission before the resolution is put to a vote.
- (c) At a meeting of the Board held in accordance with clause 5.7 (b), the Board:
 - (i) shall give to the Member, or his or her representative, an opportunity to be heard;
 - (ii) shall give due consideration to any written statement submitted by the Member; and
 - (iii) shall determine by resolution whether to expel the Member.

5.8 Convening a Special General Meeting

- (a) If at the meeting of the Board, the Board resolves to expel the Member, the Member may, not later than 48 hours after the meeting, give to the Secretary a notice to the effect that the Member wishes to appeal to the Institute at a Special General Meeting against the resolution.
- (b) If the Secretary receives a notice under clause 5.8(a), the Secretary must notify the Board and the Board must convene a Special General Meeting to be held within 40

days after the date on which the Secretary received the notice.

5.9 Conduct of Special General Meeting

At a Special General Meeting convened under clause 5.8:

- (a) no business other than the question of the appeal shall be transacted;
- (b) the Board may place before the Special General Meeting details of the grounds for the resolution and the reasons for the passing of the resolution;
- (c) the Member, or his or her representative, must be given an opportunity to be heard; and
- (d) the Members present shall vote by secret ballot on the question whether the resolution should be confirmed or revoked.

5.10 Determination of Special General Meeting

If at the Special General Meeting a majority of the Members vote in person or by proxy in favour of the confirmation of the resolution, the resolution is confirmed; and in any other case, the resolution is revoked.

5.11 Affiliated Organisations

- (a) The Board may from time to time make regulations defining the criteria for a club or similar organization to become an Affiliated Club of the Institute.
- (b) The Board may admit any club or similar organization as an Affiliated Club. The Directors need not give reasons for rejecting any application for admission as an Affiliated Club.
- (d) The Board may remove any club or similar organization as an Affiliated Club if in its opinion the club has ceased to comply with the requirements for an Affiliated Club. The Directors need not give reasons for removing any club or similar organization as an Affiliated Club.
- (d) An Affiliated Club:
 - (i) may describe itself on its letterhead and other material as an Affiliated Club of the Wireless Institute of Australia;
 - (ii) may be represented at any general meeting of the Institute;
 - (iii) may participate in any conferences or meetings conducted by the Institute for the benefit of Affiliated Clubs;
 - (iv) shall not be liable to pay any annual subscription; and
 - (v) shall not have any vote as a Member.

6 Register Of Members

The Secretary must keep the Register at the Office and must enter in the Register:

- (a) full names and addresses of Members;
 - (b) date on which each Member becomes a Member; and
 - (c) date on which any Member ceases to be a Member.
- The Register is to be open for inspection by Members.

7 Annual Subscription

7.1 Annual Subscription

The annual subscription for ordinary Membership, and any sub-category of ordinary Membership established by the Board and any sub-category of Non-Voting Membership established by the Board shall be such amount as is fixed from time to time by the Board and is payable annually (or such other period as is determined by the Board) in advance on such date as the Board may determine.

7.2 First Annual Subscriptions

From the Adoption Date until otherwise determined by the Board the Annual Subscription for the following sub-categories of ordinary Membership shall be:

Sub-category	Annual Subscription
Member	\$
Overseas Member	\$
Concession Member	\$
Family Member	\$
Member – No magazine	\$

7.3 Annual Subscriptions of first Members

The Annual Subscription to the Institute of a first Member (other than an Honorary Life Member) shall not become payable before the subscription payable by that Member to the Division of which that first Member was a member would have been payable.

7.4 Board may Pro Rata Fees

The Board may in its absolute discretion pro rata the annual subscription and any other fees payable by a Member who joins the Institute during a year.

7.5 Fees are Debt Due

All subscriptions, fees and other moneys owing to the Institute by a Member at the time of the resignation or expulsion of the Member shall remain a debt due and owing to the Institute notwithstanding the Member's resignation or expulsion.

8 General Meetings

8.1 Annual general meeting

An annual general meeting of the Institute must be held in accordance with the Corporations Act.

8.2 Holding of general meetings

General meetings are to be held at the times and places as are determined by the Board.

8.3 Convening of general meetings

- (a) The Directors may whenever they think fit and must upon a requisition made in accordance with clause 8.3(b) convene a general meeting of the Institute.
- (b) The Directors must call and arrange to hold a general meeting of the Institute upon the request of at least 100 Members who are entitled to vote at the general meeting.
- (c) The request must:
 - (i) be in writing; and
 - (ii) state any resolution to be proposed at the meeting; and
 - (iii) be signed by the Members making the request; and be given to the Secretary.
- (d) Separate copies of a document setting out the request may be used for signing by Members if the wording of the request is identical in each copy.
- (e) The Board may change the venue for, postpone or cancel a general meeting, unless the meeting is called and arranged to be held by the Members or the Court under the Corporations Act.
- (f) If a general meeting is called and arranged to be held under clause 8.3 (b), the Directors may not:
 - (i) postpone it beyond 2 months after the request is given to the Secretary; or
 - (ii) cancel it without the consent of the requisitioning Members.

8.4 Notice of meetings

At least 21 days notice must be given of a meeting of Members unless the Corporations Act otherwise provides. The notice must specify the place, date and time of the meeting and in the case of:

- (a) special business, the general nature of that business; and
- (b) an election of Directors, the names of the candidates for election and their date of birth if over the age of 72 years.

8.5 Omission to give notice

The accidental omission to give notice of a meeting to or the non-receipt of notice of a meeting by any person entitled to receive notice does not invalidate the proceedings at the meeting.

8.6 Special business

All business will be special that is transacted at:

- (a) a general meeting not being an annual general meeting;
- (b) an annual general meeting with the exception of:
 - (i) the confirmation of the minutes of the preceding meeting;
 - (ii) the receipt and consideration of the annual financial report and the reports of the Directors and the auditors;
 - (iv) the election of Directors; and
 - (v) the transaction of any business which under the Corporations Act or this Constitution is required to be transacted.

9 Proceedings At Meetings

9.1 Quorum

At least 20 Members present in person or by proxy or representative and entitled to vote is a quorum for all general meetings. No business is to be transacted at any general meeting unless a quorum is present at the time the meeting proceeds to business.

9.2 Lack of quorum

If within 30 minutes after the time appointed for the meeting a quorum is not present, the meeting will stand adjourned to the same day in the next week at the same time and place or to such other day time and place as the Directors determine. If at the adjourned meeting a quorum is not present within 30 minutes after the time appointed for the meeting, 10 Members present in person or by proxy or representative is a quorum and if such reduced quorum is not then present the meeting will be dissolved.

9.3 Chairperson

The President may preside as chairperson at every general meeting. If the President is unable or unwilling or refuses to act as chairperson of a meeting the Vice President may act as chairperson of the meeting. If the President or Vice President is not present within 15 minutes after the time appointed for the meeting or is unable or unwilling or refuses to act as chairperson of the meeting, the Directors must choose another Director as chairperson. If no Director is so chosen or if all the Directors present decline to take the chair, the Members present must choose one of their own number to be chairperson.

9.4 Adjournment

The chairperson of a general meeting may with the consent of a meeting at which a quorum is present (and must if directed by the meeting) adjourn the meeting from time to time and place to place, but no business is to be transacted at an adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place.

9.5 Notice of adjourned meeting

It is not necessary to give notice of an adjournment or of the business to be transacted at an adjourned meeting, unless the meeting is adjourned for 30 days or more, in which case notice of the adjourned meeting is to be given as in the case of an original meeting.

9.6 Decision of resolutions

- (a) Subject to paragraph (b) of this clause, at a general meeting a resolution put to the vote of the meeting is to be decided on a show of hands unless a poll is (before

or on the declaration of the result of the show of hands) demanded by the chairperson or (other than on the election of the chairperson of a meeting or the adjournment of a meeting) by not less than 5 Members having the right to vote at the meeting.

(b) A question arising at a general meeting relating to the order of business, procedure or conduct of the meeting must be referred to the chairperson of the meeting, whose decision is final.

9.7 Minutes as evidence of result

Unless a poll is duly demanded, a declaration by the chairperson that a resolution has, on the show of hands, been:

- (a) carried;
- (b) carried unanimously;
- (c) carried by a particular majority; or
- (d) lost or not carried by a particular majority,

and an entry to that effect in the book containing the minutes of the proceedings of the Institute signed by the chairperson, is conclusive evidence of the fact, without proof of the number or proportion of the votes recorded in favour of or against the resolution.

9.8 Taking of poll

- (a) If a poll is duly demanded it must be taken in the manner and at the time and place as the chairperson of the meeting directs. The result of the poll will be deemed to be the resolution of the meeting at which the poll was demanded provided that a poll on the election of a chairperson of a meeting or on any question of adjournment must be taken at the meeting and without adjournment.
- (b) The demand for a poll does not prevent the meeting continuing for the transaction of any business other than the question on which a poll has been demanded.
- (c) The demand for a poll may be withdrawn.
- (d) In the case of a dispute as to the admission or rejection of a vote on a show of hands or on a poll, the chairperson must determine the dispute and the determination made in good faith will be final and conclusive.

10 Votes Of Members

10.1 Entitlement to vote

Subject to this Constitution and any rights or restrictions attached to any category or sub-category of Membership, at a general meeting every Member (other than a Non-Voting Member) present in person or represented by proxy or representative has one vote, whether on a show of hands or on a poll.

10.2 Casting vote

In the case of an equality of votes whether on a show of hands or on a poll, the chairperson of the meeting at which the show of hands is taken or at which the poll is demanded, is entitled to a casting vote in addition to any vote to which he or she is entitled as a Member.

11 Proxies

11.1 Appointment of proxy

Subject to section 249X(3) of the Corporations Act, a Member (other than a Non-Voting Member) may appoint one proxy only, who must be another Member or a representative of another Member, and that proxy is entitled to vote on a show of hands or on a poll.

11.2 Instrument of proxy

The instrument appointing a proxy must be in writing signed by the appointor or by his or her attorney duly authorised in

writing. An instrument appointing a proxy may direct the manner in which the proxy is to vote in respect of a particular resolution. Where an instrument contains such direction, the proxy is not entitled to vote on the proposed resolution except as directed in the instrument.

11.3 Proxy to be deposited at office

(a) The instrument appointing a proxy and the authority (if any) under which it is signed or a certified copy of the authority must be received by the Institute not less than 24 hours before the general meeting or adjourned meeting or taking of the poll, at which the person named in the instrument proposes to vote. If this clause 11.3 (a) is not complied with, the instrument of proxy will be treated as invalid.

(b) An instrument appointing a proxy is received when it is received at any of the following:
(i) the Office;
(ii) a facsimile number at the Office; or
(iii) a place, facsimile number or electronic address specified for the purpose in the notice of meeting.

11.4 Form of proxy

An instrument appointing a proxy is valid if it is signed by the Member making the appointment and contains the following information:

- (a) the Member's name and address;
- (b) the Institute's name;
- (c) the proxy's name or the name of the office held by the proxy; and

(d) the meetings at which the appointment may be used.

An appointment of a proxy need not be witnessed and a later appointment revokes an earlier one if both appointments could not be validly exercised at the meeting.

An instrument of proxy in which the name of the appointee is not filled in is taken to be given in favour of the chairperson of the meeting to which it relates.

11.5 Power to demand poll

The instrument appointing a proxy is taken to confer authority to demand or join in demanding a poll.

11.6 Votes of proxies

A vote given in accordance with the terms of an instrument of proxy is valid despite the previous death or unsoundness of mind of the appointor or revocation of the instrument or of the authority under which the instrument was executed unless notice in writing of the death unsoundness of mind or revocation is received by the Institute before the meeting or adjourned meeting at which the instrument is used. A proxy is not revoked by the appointor attending and taking part in any meeting but if the appointor votes on a resolution either on a show of hands or on a poll the person acting as proxy for that appointor has no vote as proxy on that resolution.

11.7 Identification of proxy

The chairperson of a meeting may require a person acting as a proxy to establish to the satisfaction of the chairperson that he or she is the person nominated as proxy in the form of proxy lodged under this Constitution. If the person does not comply, that person may be excluded from voting either upon a show of hands or upon a poll.

11.8 Power of attorney

If a Member executes or proposes to execute an instrument or to act by or through an attorney the Member must produce to the Institute within the time prescribed by clause 11.3 the instrument appointing the attorney or a certified copy of the instrument.

12 Directors**12.1 Number**

- (a) The number of Directors must not be less than five nor more than seven. If the number of Directors in office at any time falls below five, the Directors must not act in the affairs of the Institute (other than to appoint additional Directors) until the number of Directors is made up to at least five.
- (b) The Institute may by resolution:
- (i) increase or decrease the minimum or maximum number of Directors; and
 - (ii) appoint or, in accordance with section 203D of the Corporations Act, remove a Director.

12.2 Directors must be Members

Directors must be Members but not Non-Voting Members.

12.3 Directors to elect President

- (a) Subject to clause 12.6 at the first meeting of the Board following an annual meeting the Directors shall appoint from their number a President and Vice President, who shall hold office until the next meeting of the Board following an annual meeting. A President and a Vice President is eligible for re-election.
- (b) The offices of President and Vice President becomes vacant if the President or the Vice President:
- (i) ceases to be a Member
 - (ii) ceases to be a Director;
 - (iii) becomes an insolvent under administration within the meaning of the Corporations Law; or
 - (iv) resigns his office by notice in writing given to the Secretary.
- (c) If the office of President becomes vacant the Vice President shall become President for the remainder of the term of the President who vacated the office.
- (d) If the office of Vice President becomes vacant the Board shall appoint one of their number as Vice President for the remainder of the term of the Vice President who vacated the office.

12.4 No remuneration

Except as provided for in clause 27, no Director may receive any remuneration for his or her services as a Director or as a Member.

12.5 Vacancies

- (a) Subject to clauses 15 and 14.1, if any vacancy occurs in the Board for any reason, that vacancy must be filled within three calendar months (or such longer period as the Directors may otherwise resolve) by the remaining Directors. The person filling the vacancy is appointed for the remainder of the term of office of the Director who created the vacancy.
- (b) All such appointments must be made by instrument signed by all of the surviving or continuing Directors or the legal personal representatives of the last surviving or continuing Director.
- (c) The continuing Directors may act despite any vacancy in the Board. If however the number of Directors falls below the minimum number fixed under this Constitution, the Directors may only act:
- (i) for the purpose of increasing the number of Directors to the minimum by summoning a general meeting of the Institute; or
 - (ii) in emergencies, but for no other purpose.

12.6 First Board

Upon the adoption of this Constitution:

- (a) the existing directors and other officers shall be deemed to have resigned; and

(b) the following persons shall be appointed by force of this clause to be the Directors:

Group A

[name]
[name]
[name]
[name]

Group B

[name]
[name]
[name]

(c) Subject to clauses 15 and 14.1 the Directors in Group A shall hold office until the third annual general meeting following the Adoption Date, and the Directors in Group B shall hold office until the second annual general meeting following the Adoption Date. All of the Directors shall be eligible for re-election.

(d) The following Director shall be appointed by the force of this clause to be President:

[name]
who shall hold office until the first meeting of the Board following the second annual general meeting following the Adoption Date.

(e) The following Director shall be appointed by the force of this clause to be Vice President:

[name]
who shall hold office until the first meeting of the Board following the second annual general meeting following the Adoption Date.

13 Powers And Duties Of Directors**13.1 Management of the Institute**

(a) The management of the business and affairs of the Institute is vested in the Directors. In addition to the powers and authorities conferred on the Directors by this Constitution or otherwise, the Directors may exercise all the powers and do everything that the Institute may exercise or do and not required to be exercised or done by the Institute in general meeting. Without limitation, the Directors may exercise all the Institute's powers to:

- (i) borrow or otherwise raise money;
- (ii) charge Institute property; and
- (iii) issue debentures or give any other security for a debt, liability or obligation of the Institute or (subject to clause 27) any other person.

(b) The powers of the Directors are subject to the Corporations Act, this Constitution and to any regulations (not being inconsistent with this Constitution) from time to time made by the Institute in general meeting. No regulation made by the Institute in general meeting invalidates any prior act of the Directors which would have been valid if that regulation had not been made.

(c) The Directors may:

- (i) appoint or employ a person to be an officer, agent or attorney of the Institute with powers, discretions and duties, including those vested in or exercisable by the Directors;
- (ii) authorise an officer to delegate powers and duties vested in that officer; and
- (iii) dismiss or remove any agent, officer or attorney with or without cause.

13.2 Cheques, etc.

All cheques and other negotiable instruments and receipts for money paid to the Institute must be signed, drawn, accepted endorsed or otherwise executed by the persons and in the manner as the Board determines.

14 Appointment And Removal Of Directors

14.1 Directors' retirement by rotation and filling of vacated offices

- (a) At every annual general meeting one-half of the Directors (subject to clause 12.6) or if their number is not a whole multiple of two then the number nearest to but not exceeding one-half must retire from office provided that no Director may retain office for more than two years or after the second annual general meeting following the Director's appointment, whichever is the longer. A retiring Director must act as a Director throughout the meeting at which the Director retires. An election of Directors must take place each year.
- (b) In every year the Director or Directors to retire is the one-half or other number nearest to, but not exceeding, one-half of the number of the Directors who have been longest in office since their last election. As between two or more who have been in office an equal length of time the Director or Directors to retire will failing agreement between them be determined by lot in any manner determined by the President. A retiring Director is eligible for re-election.
- (c) The Institute at any annual general meeting at which any Director retires may fill the vacated office by re-electing the Director or electing some other person to fill the vacancy. The Board may determine that the election of Directors be conducted by postal ballot with the result of the election to be announced at the annual general meeting. A postal ballot shall be conducted in accordance with the regulations made by the Board from time to time.
- (d) No person except a Director retiring by rotation, a Director appointed by virtue of clause 12.6 or a person recommended by the Directors for election is eligible for election to the office of Director at any meeting unless the person (being a Member) or some Member intending to propose the person has at least 45 days before the meeting left at the Office a notice in writing duly signed by the nominee giving the nominee's consent to nomination and signifying the nominee's candidature for the office or the intention of such Member to propose. Notice of each and every candidature must be forwarded to all Members not less than 28 days (or such lesser period as is from time to time permitted by the Corporations Act) prior to the meeting at which an election is to take place.
- (e) Any Director may retire from office upon giving notice in writing to the Institute of the Director's intention to do so and such resignation takes effect upon the expiration of the notice or its earlier acceptance.

14.2 Removal of Directors

- (a) Subject to clause 14.2 (b), the Institute in general meeting may by resolution remove any Director from office.
- (b) No resolution for the removal of a Director from office is to be put to a general meeting unless notice signed by a Member duly qualified to vote at that meeting and signifying the intention of that Member to propose that resolution is received by the Institute not less than 28 clear days before the date appointed for holding the meeting.

15 Disqualification Of Directors

- (a) In addition to the circumstances in which the office of Director becomes vacant by virtue of the Corporations Act or this Constitution, the office of Director becomes vacant if:

- (i) the Director becomes of unsound mind or a person whose personal estate is liable to be dealt with in any way under the law relating to mental health;
 - (ii) the Director becomes an insolvent under administration or makes any composition or arrangement with his or her creditors or any class of them;
 - (iii) the Director is removed from office pursuant to this Constitution, resigns office by notice in writing to the Institute or refuses to act;
 - (iv) the Director is absent from the meetings of Directors for a continuous period of six months without special leave of absence from the Directors and the Directors resolve that the Director's office will be vacated;
 - (v) the period for which the Director is appointed expires;
 - (vi) the Director ceases to be a Member;
 - (vii) the Director resigns by written notice to the Institute or dies;
 - (viii) the Director is removed from office pursuant to section 203D of the Corporations Act.
- (b) No proceedings of the Board, or any resolution passed at any meeting, will be invalidated by reason of any Director taking part or concurring in such meeting or resolution being then disqualified until an entry is made in the minutes of the Board of the Director's office having been so vacated.
 - (c) Any Director whose office becomes so vacant will be eligible for immediate re-election provided that the disqualifying conditions may be dispensed with, altered, varied or modified by a Special Resolution.

16 Directors' Contracts

16.1 Directors' interests

Subject to the Corporations Act:

- (a) no Director or proposed Director is disqualified by that office from:
 - (i) entering into a contract, agreement or arrangement with the Institute;
 - (ii) becoming or remaining a Director of any company in which the Institute is in any way interested or which is in any way interested in the Institute;
- (b) no contract, agreement or arrangement in which a Director is in any way interested, entered into by or on behalf of the Institute can be avoided merely because of that Director's interest; and
- (c) no Director who:
 - (i) enters into a contract, agreement or arrangement in which the Director has an interest; or
 - (ii) is a director of the other company with which the Institute has entered into the contract, agreement or arrangement,

is liable to account to the Institute for any profits or remuneration realised by that Director as a result of his or her being interested or being a director of the other company.

16.2 Declaration of interest

The nature of a Director's interest in any contract, agreement or arrangement must be declared by that Director at a meeting of the Directors in accordance with the Corporations Act as soon as practicable after the relevant facts have come to his or her knowledge. A general notice that a Director is a member of any specified firm or corporation and is to be regarded as interested in all transactions with that firm or corporation is a sufficient declaration under this clause as regards the Director and the transactions. After giving the general notice it is not necessary for the Director to give any special notice relating to any particular transaction with that firm or corporation. The

Secretary must record in the minutes any declaration made or any general notice given by a Director under this clause.

16.3 Votes by interested Directors

Subject to the Corporations Act, a Director who has a material personal interest in a matter that is being considered at a meeting of Directors:

- (a) must not vote on the matter (or in relation to a proposed resolution in relation to the matter, whether in relation to that or a different Director); and
- (b) must not be present while the matter (or a proposed resolution of that kind) is being considered at the meeting, unless:
 - (i) the matter applies to an interest that the Director has as a Member in common with the other Members; or
 - (ii) the Directors have passed a resolution that identifies the Director, the interest and the matter, and states that the Directors voting for the resolution are satisfied that the interest does not disqualify the Director from considering or voting on the matter;
 - (iii) the interested Director is entitled to be present and vote as a result of a declaration or order made by the ASIC under section 196 of the Corporations Act; or
 - (iv) the interested Director is otherwise permitted by the Corporations Act to be present and vote.

17 Directors' Conflicts Of Interest

If a Director holds any offices or possesses any property such that he or she might have duties or interests which directly or indirectly conflict with his or her duties or interest as Director, that Director must declare at a meeting of the Directors the fact, nature, character and extent of the conflict.

18 Proceedings Of Directors

18.1 Procedure generally

The Directors may meet together for the dispatch of business and adjourn and otherwise regulate their meetings as they think fit.

18.2 Quorum

- (a) The quorum for a meeting of the Board is the next whole number after one-half of the number of Directors in office, or such other number as determined by the Directors from time to time.
- (b) If the number of Directors in office at any time is not sufficient to constitute a quorum at a meeting of Directors, or is less than the minimum number of Directors fixed under this Constitution, the remaining Directors must act as soon as possible to:
 - (i) increase the Directors to a number sufficient to constitute a quorum and to satisfy the minimum number of Directors required under the Constitution;
 - (ii) convene a general meeting of the Institute for that purpose; or
 - (iii) appoint additional Directors.

and until that has happened the Directors may only act if and to the extent that there is an emergency requiring them to act.

18.3 Calling of meetings

A Director may at any time convene a meeting of the Board by notice to the other Directors. Notice may be given to a Director either personally or by telephone, fax or other electronic means or by posting it in a prepaid envelope or wrapper addressed to the Director at any address within Australia to be supplied by him or her for that purpose.

18.4 Notice of meetings

- (a) Notice of a meeting of the Board is to be given to all Directors except to a Director whom the Secretary when giving notice to other Directors reasonably believes to be outside Australia.
- (b) A notice of meeting
 - (i) must specify the time and place of the meeting, and
 - (ii) may be given immediately before the meeting.
- (c) Non-receipt of notice of meeting of Directors by, or a failure to give notice of meeting of Directors to, a Director does not invalidate any act matter or thing done by or resolution passed at the meeting if non-receipt or failure occurred by accident or error

18.5 Chairperson of meetings

The President shall be chairperson of all meetings of the Board. If the President is not present within 15 minutes of the time appointed for the holding of the meeting or is unable or unwilling to act, the Vice President shall act as chairperson of the meeting. If the President or Vice President is unable or unwilling to act as chairperson, the Directors present must elect a chairperson of their meeting from among themselves.

18.6 Determinations

Subject to clause 18.10, questions arising at any meeting of the Board are to be decided by a majority of votes. Each Director has one vote and a determination by a majority of the Directors will for all purposes be deemed a determination of the Directors. If there is equality of votes at a meeting at which a quorum is present the chairperson has a second or casting vote in addition to a deliberative vote.

18.7 Delegation to Committees

The Board may delegate any of its powers to Committees consisting of one or more Directors or other persons as the Board thinks fit. Any Committee formed must comply with the regulations that may be imposed on it by the Board in exercising the Committee's delegated power.

18.8 Procedure of Committees

The meetings of Committees consisting of more than one person are governed by the clauses of this Constitution regulating the meetings of the Directors so far as they are applicable and are not superseded by any regulations made by the Directors under this Constitution.

18.9 Validation of irregular acts

Any act done by any meeting of the Board or by a Committee or by any person acting as a Director will be valid even if it is later discovered.

- (a) that there was some defect in the appointment or continuance in office of a Director or such other person; or
- (b) that any of them was disqualified or had vacated office or were not entitled to vote.

18.10 Written resolutions

A resolution in writing signed by all the Directors for the time being in Australia (not being less than a quorum) is as valid and effectual as if it had been passed at a meeting of Directors duly held. That resolution may consist of several copies of a document each signed by one or more Directors.

18.11 Voting authority

A Director who is unable to attend a meeting of the Board may authorise another Director to vote at that meeting and the Director authorised will have one vote for each Director by whom he or she is so authorised in addition to his or her own vote. Any such authority must be in writing (including by fax) and must be produced at the meeting at which it is to be used and be left with the Secretary for retention with the Institute's records.

18.12 Advisory Committees

- (a) The Board may appoint Advisory Committees in respect of matters previously the responsibility of a Division, to advise the Board from time to time in respect of such matters and on any other matters considered by the Board to be relevant to promoting the objects of the Institute.
- (b) The first members of each Advisory Committee shall be the members of the Council or other governing body of each Division on the Adoption Date who agree to be a member of an Advisory Committee.
- (c) The Board may from time to time appoint to an Advisory Committee any person whom the Board believes is interested in promoting the objects of the Institute, and may at any time remove a person from his or her position on an Advisory Committee.
- (d) The Board may impose such regulations as it thinks fit on the activities and proceedings of the Advisory Committees.

18.13 Meetings of Directors by Instantaneous Communication Device

For the purposes of this Constitution, the contemporaneous linking together by Instantaneous Communication Device of a number of consenting Directors not less than the quorum, whether or not any one or more of the Directors is out of Australia, is deemed to constitute a meeting of the Directors and all the provisions of this Constitution as to the meetings of the Directors will apply to such meetings held by Instantaneous Communication Device so long as the following conditions are met:

- (a) all the Directors for the time being entitled to receive notice of the meeting of Directors are entitled to notice of a meeting by Instantaneous Communication Device and to be linked by Instantaneous Communication Device for the purposes of such meeting. Notice of any such meeting may be given by the Instantaneous Communication Device or in any other manner permitted by this Constitution;
- (b) at the commencement of the meeting each of the Directors taking part in the meeting by Instantaneous Communication Device is able to hear each of the other Directors taking part;
- (c) at the commencement of the meeting each Director must acknowledge the Director's presence for the purpose of a meeting of the Directors of the Institute to all the other Directors taking part;
- (d) a Director must not leave the meeting by disconnecting the Director's Instantaneous Communication Device unless the Director has previously obtained the express consent of the chairperson of the meeting. A Director is conclusively presumed to have been present and to have formed part of the quorum at all times during the meeting by Instantaneous Communication Device unless the Director has previously obtained the express consent of the chairperson of the meeting to leave the meeting; and
- (e) a minute of the proceedings of a meeting by Instantaneous Communication Device is sufficient evidence of those proceedings and of the observance of all necessary formalities if certified as a correct minute by the chairperson.

19 Minutes

The Directors must cause minutes to be kept in accordance with the Corporations Act:

- (a) of the names of the Directors present at each meeting of the Board and of any Committee; and
- (b) of all resolutions and proceedings of general meetings

and of meetings of the Board and of Committees.

The minutes must be signed by the chairperson of the meeting at which the proceedings were held or by the chairperson of the next meeting.

20 Secretary

The Directors must appoint one or more Secretaries in accordance with the Corporations Act at the remuneration (if any) and on the terms and conditions as the Directors think fit. Any Secretary so appointed may be removed by the Directors.

21 Other Positions

The Directors may appoint one or more persons to undertake the tasks of a general manager and a chief financial officer with the responsibilities and at the remuneration (if any) and on the terms and conditions as the Directors think fit. Any person so appointed may be removed by the Directors.

22 Seal

The Directors must provide for the safe custody of any Seal. The Seal may only be used by the authority of the Directors or of a Committee authorised by the Directors for that purpose. Every instrument to which the Seal is affixed must be signed by a Director and countersigned by the Secretary or by a second Director or by some other person appointed by the Directors for that purpose.

23 Financial Records**23.1 Financial and other records**

The Directors must cause proper financial and other records to be kept and provide annual financial reporting to Members as required by the Corporations Act. The Directors must from time to time determine whether and to what extent and at what times and places and under what conditions or regulations any financial or other records of the Institute are to be open to the inspection of Members who are not Directors. No Member (who is not a Director) has the right to inspect any records of the Institute except as conferred by statute or authorised by the Directors or by the Institute in general meeting.

23.2 Time for financial reports

The interval between the end of a financial year of the Institute and the annual financial reporting to Members must not exceed the period (if any) prescribed by the Corporations Act.

24 Notices**24.1 Notices to Members**

The Institute may give notice to a Member:

- (a) personally;
- (b) by sending it by post to the Member at his or her registered address;
- (c) by sending it to the fax number or electronic mail address (if any) nominated by the Member; or
- (d) in any other way allowed under the Corporations Act.

24.2 Deemed service

- (a) If a notice is sent by post, service of the notice is taken to be effected by properly addressing, prepaying and posting a letter containing the notice and to have been effected at the time at which the letter would be delivered in the ordinary course of post;
- (b) A notice sent by fax is deemed to be received on production of a transmission report by the machine from which the fax was sent which indicates that the fax was sent in its entirety to the fax number of the recipient if produced before 5.00 pm on a Business Day, otherwise on the next Business Day.
- (c) (i) A notice sent by electronic mail is deemed to be received on the day of transmission, if transmitted

before 5.00 pm on a Business Day, otherwise on the next Business Day.

- (ii) A notice sent by electronic mail is deemed not to be served only if the computer system used to send it reports that delivery failed.

24.3 Persons entitled to notice of general meeting

Notice of every general meeting must be given in the manner authorised to:

- (a) every Member; and
- (b) the auditor for the time being (if any) of the Institute.

No other person is entitled to receive notices of general meetings.

25 Winding Up

If the Institute is wound up or dissolved and, after the satisfaction of all its debts and liabilities, any assets whatsoever remain, the remaining assets must not be paid or distributed to the Members but must be given or distributed to some other institution or company having objects similar to the objects of the Institute and whose constitution shall prohibit the distribution of its or their income and property among its or their members to an extent at least as great as is imposed on the Institute. Such institution or institutions to be determined by the members of the Institute at or before the time of dissolution and in default thereof by application to the Supreme Court of the state or territory in which the principal office of the Institute is located.

26 Indemnity Of Officers

(a) The Institute must indemnify each Officer out of the assets of the Institute To The Relevant Extent against any Liability incurred by the Officer in or arising out of the conduct of the business of the Institute or a subsidiary of the Institute or in or arising out of the discharge of the Duties Of The Officer.

(b) Subject to the Corporations Act, where the Board considers it appropriate, the Institute may execute a documentary indemnity in any form in favour of any Officer.

(c) Subject to the Corporations Act, where the Board considers it appropriate, the Institute may:

- (i) make payments by way of premium in respect of any contract effecting insurance on behalf or in respect of an Officer against any Liability incurred by the Officer in or arising out of the conduct of the business of the Institute or a subsidiary of the Institute or in or arising out of the discharge of the Duties Of The Officer; and

- (ii) bind itself and amend any contract or deed with any Officer to make the payments;

(d) In this clause:

- (i) "Officer" means:

- (A) a Director or Secretary or a director or secretary of a subsidiary of the Institute; or

- (B) a person.

- (i) who makes or participates in making decisions that affect the whole, or a substantial part, of the business of the Institute or a subsidiary of the Institute;

- (ii) who has the capacity to affect significantly the Institute's or a subsidiary of the Institute's financial standing; or

- (iii) in accordance with whose instructions or wishes the Directors or the directors of a subsidiary of the Institute are accustomed to act (excluding advice given by the person in the proper performance of functions attached to the person's professional capacity or their business relationship with the Directors or

the directors of a subsidiary of the Institute or the Institute or a subsidiary of the Institute), and includes a former officer;

- (ii) "Duties Of The Officer" includes, in any particular case where the Board considers it appropriate, duties arising by reason of the appointment, nomination or secondment in any capacity of an Officer by the Institute or, where applicable the subsidiary of the Institute, to any other corporation;

- (iii) "To The Relevant Extent" means:

- (A) to the extent the Institute is not precluded by law from doing so;

- (B) to the extent and for the amount that the Officer is not otherwise entitled to be indemnified and is not actually indemnified by another person (including, but without limitation, a subsidiary or an insurer under any insurance policy); and

- (C) where the Liability is incurred in or arising out of the conduct of the business of another corporation or in the discharge of the Duties Of The Officer in relation to another corporation, to the extent and for the amount that the Officer is not entitled to be indemnified and is not actually indemnified out of the assets of that corporation; and

- (iv) "Liability" means all costs, charges, losses, damages, expenses, penalties and liabilities of any kind including, in particular, legal costs incurred in defending an action for a liability incurred as an Officer.

27 Non-profit

The income and property of the Institute must be applied solely towards the promotion of the objects of the Institute as set out in this Constitution and no portion of it is to be paid or transferred directly or indirectly by way of profit to Members. This does not prevent the payment in good faith:

- (a) of remuneration to any officers or servants of the Institute in return for any services rendered to the Institute, if such payment is approved by the Board and the amount payable is not more than an amount that would be commercially reasonable for the service;

- (b) for goods supplied in the ordinary and usual course of business;

- (c) of interest at a reasonable and proper rate on money borrowed from any Member;

- (d) of reasonable and proper rent for premises leased or licensed by any Member to the Institute; or

- (e) of out of pocket expenses approved by the Board incurred by a Director in performing Institute duties.

28 Limited Liability

The liability of the Members is limited.

29 Members' Guarantee

Every Member undertakes to contribute an amount not exceeding twenty dollars to the property of the Institute if it is wound up while he or she is a Member or within one year after ceasing to be a Member, for:

- (a) payment of the debts and liabilities of the Institute contracted before the time when he or she ceased to be a Member;

- (b) the costs charges and expenses of winding up; and

- (c) for an adjustment of the rights of contributors among themselves.

30 Changing This Constitution

This Constitution may only be changed by Special Resolution in accordance with the Corporations Act.

Constitution of the Wireless Institute of Australia

Explanatory Memorandum

1 Purpose of this paper

The purpose of this Memorandum is to provide an explanation of the proposed Constitution for the Wireless Institute of Australia.

It does not attempt to address every question that may arise, because that would make it a very long document indeed; rather it attempts to provide a general explanation of the approach adopted.

2 Background

The background to this Constitution is the result of a meeting in Sydney last December, attended by a number of people, many currently involved in the Institute at various levels, concerned by the challenges of a dropping amateur population and a dropping membership and the opportunity for growth presented by the abolition of morse as an HF licence requirement and the likely new licensing structure when the ACA completes its present investigations, and to meet those challenges and opportunities, concerned to improve the Institute by moving to a single, hopefully more efficient, national body, rather than the somewhat cumbersome federal structure we have at present.

Clearly there is no single, necessarily best, answer to the many options that this approach offers. There is one reality, however. If we debate every option, seeking to ensure our own personal preference on each issue is adopted, this will become a project without end. Each of us will have, on one issue or another, a preference for an option rejected in favour of another option. That is inevitable. But each of us must be prepared to accept that the most important object now is to achieve finality quickly, for unless we do we will leave the organisation destabilised and without clear direction.

That doesn't mean that obvious errors should not be identified and rectified.

3 The basis for change

Currently each WIA member is a member of a state or territory based "division", and each of the 7 divisions is a member of another company, the federal body, the Wireless Institute of Australia, which publishes the magazine, represents the amateur service to the administration (the ACA) and represents the Australian amateurs to the International Amateur Radio Union by participating in the Region 3 organisation. That federal body works by representatives of each Division meeting to decide policy, with a small executive and other volunteers to manage and undertake the tasks.

It is proposed to change the constitution of the federal body, so that each member of a division can become a member of the single national body, with the divisions either ceasing to exist, existing as a vehicle for the new national body or changing its name and becoming a radio club.

The Wireless Institute of Australia was incorporated in 1972 to take over the then existing unincorporated body that was the then divisions combined together for certain purposes. It is a company limited by guarantee, having the certificate of the Attorney General to dispense with word 'limited' in its title. It is restricted by that certificate and its constitutional documents in what it may do – essentially it cannot distribute assets or profits to its members, but must use its income and assets for the benefit of its continuing members.

Today the company law replaces the previous memorandum of association and articles of association of a company with a single "constitution", and so the draft Constitution that has been

prepared is intended to replace the present Memorandum and Articles of Association of the WIA, turning that company from the vehicle that is central to a federal structure to the entity that is the single national association of Australian amateurs, so that everyone may be a member of that single body.

An advantage of this approach is that the existing entities simply continue – no new national organisation has to apply to join the IARU and region 3, publication of AR continues, and the oldest radio society in the world continues, simply changing to meet today's world.

4 The transition for Divisions

A number of issues remain to be addressed, and so the Constitution does not deal with the changes necessary to the divisions. It is proposed that a separate Implementation Agreement be executed between the Divisions, setting out the particular changes necessary to bring each division into the total arrangement.

A particular issue will be the changes to each division's structure to enable all that is proposed to proceed with certainty.

5 The transition for members

Unfortunately, simply changing the constitution of the federal body so that it may become the single national body of which everyone is a member doesn't make everyone who is a member of a division a member of the national body instead. That is because the company is a company limited by guarantee and each member guarantees to pay a certain amount to meet the debts of the company if that ever became necessary. That is the guarantee. The amount involved is the great sum of \$20. But it does mean that to become a member a person must sign that they will abide by the Constitution from time to time. So the Constitution has been structured to allow that to happen as simply as possible.

6 The general approach of the draft Constitution

Remember, we are concerned with a company with a large membership and with today's duties and obligations imposed on officers and directors. That is a benefit for the members. In general terms, the draft Constitution seeks to provide detailed procedural rules, detailed guidance as to matters of good governance and to generally avoid debate as to the validity of actions, so that so far as possible, even at the expense of some extra length, the Constitution is as complete a guide as possible to the proper running of the company.

On the other hand, matters such as publications no longer appear, on the basis that the Constitution provides the framework for the entity, not the detailed rules as to what it does on a day-to-day basis.

So far as timing is concerned, I have used two dates. For many purposes I have used the date of the adoption of the new Constitution, that being, for example, the date that the new board replaces the existing executive. For subscription and the like purposes I have used 1 July 2004.

7 Name, capacity and objects

Because the memorandum and articles are replaced by a single document, the name and objects are set out. However, as the company law now allows a company to do anything a person can do, long and detailed objects and powers are not necessary. I have incorporated a reference to the relevant section of the act, and set out the broadest possible objects, simply to set out what the company is really all about. These are broad, for example to represent radio amateurs both nationally and internationally, covers any sort of representation, in the ITU, as part of the IARU, to the ACA, or to a local town planning authority. Immediately we start identifying particular areas, we have to go in for a long winded set of words to make sure that something new that we haven't thought of today is also covered when it arises.

8 The definitions and interpretation

The replaceable rules for companies found in the Corporations Act are made inapplicable to this company, so that all the provisions affecting the company can be found in one place, the Constitution, and reference to the Act is ordinarily unnecessary, which I think is desirable in a company such as this.

Many of the terms used in the current articles disappear, as we are now calling many aspects of the company by their usual name – for example, we have an Annual General Meeting, rather than a Federal Convention, and a Board rather than an Executive.

There is a definition of "Division" as a member of the company on the adoption of the Constitution.

9 First members and existing members

Clause 5 deals with members.

We need some members from the start. Obviously the divisions are already members, and they can stay there. But we need some individuals to be directors, and so they are dealt with by their consent to being a member prior to the adoption before we adopt the new Constitution.

As I have said, we cannot automatically make every present member of a division a member of the new national body.

To make it as seamless as possible, what the Constitution is written around is this; every member of a division on the day that the Constitution is adopted is a "provisional member", and readily becomes a member when he signs a "Consent to Membership".

The Consent to Membership is defined, and is the paper that we need from members saying that they will abide by the Constitution. But it can also be the paper by which the members resign from a division or otherwise meets a need of their division.

That will have to be worked out with each division.

The members pay their subscription annually (or, more often, if the Board wishes) and so what will happen is that when a subscription falls due after 30 June this year, it will be a subscription for the national WIA, and the members will be asked to send their subscriptions in with the form that enables them to become members of the national body.

Some divisions allow only licensed amateurs to be full members, and have non-voting associate membership, others allow anyone interested in amateur radio to be full members. Obviously, the transition to a national body will not be successful if the transition takes away rights, so every member, full or associate of any division becomes a voting member of the national body.

Honorary Life Members become the same in the national body.

10 Categories of membership

The Constitution is written so at the start there are two categories of membership, Ordinary Membership and Honorary Life Members.

As I say above, the Constitution is written so that every member of every division can be a member, so there is now no qualification for membership other than an interest in amateur radio.

So far as Ordinary Membership is concerned, the divisions have fee structures that allow overseas members, concession members, and other groups that I have called sub-categories. To enable the smooth transition, the Constitution identifies the sub-categories that will exist from the start, and the initial subscription rates.

The Constitution allows the Board to define new sub-categories and set the fees.

However, the Constitution also makes provision for two further categories of membership.

One is a "Life Member". Other amateur societies have successfully adopted Life Members, where you pay a sum of money, usually quite large, in one or more payments, so that as long as you live you are a member. If the society gets the sums wrong, it is a disaster. But the Constitution allows the Board to establish that sort of membership.

The other category the Board may establish is a non-voting membership. In the future, taxation consequences may make selling subscriptions to publications associated with membership attractive, and it may be the means by which special memberships for students and the like may be devised, perhaps even with a limited period.

The Constitution has been written on the basis that it should include provisions that may allow the Board the means to meet new needs in the future, even though the provisions may not, in fact, be used.

11 New members

New members having voting rights require nomination and seconding, intended to make becoming a member meaningful. However, given the intent of non-voting membership, the Constitution does not require more than an application form for that category of membership.

12 Cessation of membership and expulsion

If someone just disappears or just doesn't renew we need mechanisms that are simple to terminate their membership, such as the untraceable member and the unfinancial member provisions.

These are in provisions that deal with un-financial members and untraceable members.

The expulsion of members is a serious matter, and as so much power is given to the board, the provisions as to the obligation of the board to give notice, and to hear the members who may be expelled are quite ornate. The right to appeal to a general meeting is also set out.

The requirement to allow natural justice is, hopefully, met and more importantly, arbitrary or capricious actions by the board will be constrained.

Again, the Constitution is quite detailed on procedural matters.

13 Affiliated Clubs

Clubs and affiliated bodies are presently dealt with on a divisional basis, and so, naturally, there is no identical approach.

The draft Constitution (clause 5.11) allows the Board to define the criteria for clubs and the like to be "affiliated", but does not allow an affiliated club to have voting rights nor is it liable to pay any subscription.

The problem is this; the local clubs perform an essential role in the fabric of the amateur fraternity, and must be encouraged and supported by the WIA. But, on the other hand, we do not want potential members to say "I am a member of a club, it pays its fees, and so I am already supporting the WIA and don't need to be a member."

The effect of the Constitution, apart from these parameters is to leave it to the Board to manage and meet the needs of clubs.

14 Directors

As said above, we are using the common terms for the board and the directors. But the starting issue must be the structure for the election of directors. One option is to have each director elected by members in a particular area, another is to have a mixture of some directors elected by area and some elected by all members, and yet another option is to have all directors elected by all members.

What was desired was a small, effective board, largely free to organise its own affairs, clearly responsible for acting in the best interest of all members and with no special obligation to members in a particular area, with a structure to hopefully attract directors with mix of commercial and professional backgrounds to best meet the needs of the Institute.

Accordingly, the Constitution is written on the basis that there are 7 directors, half retiring each year, each elected for two years, all available for re-election, with a President and Vice President elected by the Board annually, with the secretary and treasurers and general manager (if appointed) not directors but appointed by the board on terms determined by the board.

The first directors and the President and Vice President after the adoption of the new Constitution are appointed by name in the Constitution and hold office for 2 or 3 years respectively, demanding a real commitment from those so appointed.

Given the nature of a national body, the need for a postal ballot to appoint directors is obvious. The Constitution leaves it to the board to define the formalities of a postal ballot.

Usual provisions as to filling vacancies by the board for the balance of a resigning directors term are included.

A director may be removed by the members at a general meeting called for the purpose.

The directors can meet by phone or whatever other means so long as certain conditions are met, as set out in clause 18.13.

Other provisions deal with conflicts of interest and the like, and I deal with these under the heading Governance.

15 Advisory Committees

The Constitution allows the Board to appoint Advisory Committees "in respect of matters previously the responsibility of a Division". It contemplates that the first members shall be the council members of the former Division.

It is hoped that this provision will be useful for a new board to ensure continuity, provide useful guidance and at the same time not fetter the new board or look like we are instantly reverting to the current structure.

16 Meetings

The provisions as to meetings are standard, and hopefully provide sufficient detail as to calling a meeting and conducting a meeting, to be a proper and self-contained guide.

Most business at a general meeting, whether an annual general

meeting or another general meeting is special business, so that the general nature of the business must be included in the notice of meeting (Clause 8.4). Most special business does not require a special resolution, that is a 75% support to pass – such as changes to the Constitution.

One aspect of the a national WIA is that its membership will be spread right across the country, and so attending a meeting in Sydney or Melbourne doesn't seem very realistic. That is one reason why the information provided in the notices of meeting is important, and the provisions for proxies are important.

Why cannot we allow members to participate by phone in a general meeting in the way the directors can? Simply because it would be impossible to verify participation by only those entitled to vote and to verify proxies for the purpose of a poll. The company's legislation does, however, allow a meeting to be held in more than one place, with electronic communication between the different centres where the meeting is being held.

If the need ever really arose, the directors would no doubt investigate these options.

17 Governance

A national WIA will be a much larger single entity than any of the present entities, with some 5,000 members. Both the members and those seeking to work for them are entitled to expect and offer proper conduct in the affairs of the Institute. Today the law sets out a number of obligations of directors, and it is important, I think, that the directors and officers are provided with proper guidance, and hopefully this will also provide a reassurance for members and potential members.

The particular provisions in the draft Constitution deal with director's contracts, allowing certain contracts, ensuring their validity and protecting the director, requiring directors to declare any interest in any contract or arrangement or in any office or property that could give rise to a conflict of interest, and restricting a director from voting on matters in which the director has a material personal interest. (Clauses 16.1, 16.2, 16.3 and 17.)

18 Other matters

This paper, at this time, does not address a number of important issues. Among them is the issue of what approvals are necessary because of the nature of the company, the changes that have been made to the Articles and apparently not made to the Memorandum.

If these affect what is being sought to be achieved, so be it. But they should be regarded as technical, and not obscure the broad thrust of what is the object of what is being done.

19 Conclusion

The problem with writing constitutions is that there is a great temptation to seek to legislate for today's perceived special needs. The problem with that is what is appropriate for today's problem may not be best for tomorrow's problem, and so the constitution has to be changed.

It is better for the Constitution not to legislate for such things, but rather to establish a clear structure that enables the body to deal with whatever problems arise, facilitating the task of those undertaking the work and providing adequate ultimate protection for the members.

In the end, it is the quality of the people that we can attract to run the organisation that matters, and so, while a bad constitution may inhibit a good organisation, a good constitution will not guarantee that an organisation will work, as only people can do that.

I commend the draft Constitution for a national Wireless Institute of Australia.

Wireless Institute Of Australia

Corporate Ethics Policy

1 Introduction

As part of the process leading to the reorganisation of the Wireless Institute of Australia from a federal body to a single national body, it was recognised that the Board of the single larger body would face new challenges, and it was suggested that the board consider adopting a policy to assist its directors and officers, its employees and consultants and its many volunteers.

The Board has adopted this ethics policy to provide guidelines that the Institute will follow in connection with its various activities. In doing so the Board has recognised that while fundamentally a voluntary organisation, the Institute as a publisher and bookseller also engages in activities that are commercial in character, and so awareness of relevant legislation is essential.

The Policy expresses certain basic principles that each Board member and each officer and each of the employees and each of the many volunteers representing the Institute (collectively referred to in this Policy as the "Institute's people") should follow in all dealings related to the Institute. The Institute's people should be loyal to the Institute, should show the highest integrity and courtesy in their dealings with members and others, including preserving the confidentiality of other peoples' information and should conduct the Institute's business in accordance with law and principles of good practice.

The Board recognises that the Institute's reputation is an essential element of its success. The Institute's people must always act in a way that preserves and enhances the Institute's reputation.

While it is impossible to discuss every conceivable situation that might arise, the Institute believes that the examples contained in this Policy illustrate rules that should usually be followed to ensure that the actions of the Institute's people are not and will not be challenged for being unethical.

Scope

This Policy is intended to apply to all Institute people with respect to all actions taken and work performed, whether paid or voluntary, for the Institute.

No Institute person should act contrary to the Policy, even if directed to do so.

The Board is vested with ultimate authority and responsibility to determine the applicability of this Policy to any particular facts that may arise and to determine the steps that should be taken to correct any situation it believes is not in the best interest of the Institute, including, if appropriate, termination of contractual arrangements.

The Board is responsible for the constant review of this policy.

2 Policy

All of the Institute's people must preserve and, if possible, take all reasonable action to enhance, the Institute's interests and reputation, with its own members, the regulatory authorities, governmental agencies and suppliers and the general public.

Each of the Institute's people should avoid actual or apparent conflicts of interest with the Institute, which includes taking personal advantage from representing the Institute.

If circumstances involving a possible conflict of interest arise, they should be disclosed to the President in advance of the occurrence of the conflict, so that the Institute may, at the Institute's discretion, take appropriate steps to prevent the conflict or otherwise resolve or waive the conflict.

Secrecy

The representation of the Institute may bring the Institute's people into close contact with confidential information, including Board and management discussions and decisions on confidential matters, matters relating to members, their businesses, regulatory agencies and their current policy intents, and other

knowledge or information not available to the public.

All of the Institute's people are required to keep secret all such confidential matters and information, and may not use or disclose such to anyone outside of the Institute through any means at any time.

This is particularly important in the context of on air discussions, where even casual speculation by any of the Institute's people can damage the Institute.

Conflict of interest

Each of the Institute's people has a responsibility to the Institute to be as free as possible from the influence of any interest which conflicts with that of the Institute when representing it in negotiations, or making recommendations with respect to policy or transactions with third parties, including contractors. This policy is to ensure that such decisions are made on the basis of unbiased and independent judgement and solely in the best interests of the Institute without favour or preference to third parties.

3 Ethics, integrity and courtesy in dealings with members and others policy

All the Institute's dealings must be conducted in accordance with the highest level of courtesy, ethics and good practice. This applies to dealings with governmental authorities, members, contractors and suppliers and the general public.

The Institute's policy is to cooperate in all reasonable ways with all governmental authorities and to comply with all applicable laws and regulations.

Dealing with confidential information of third parties

The Institute's people may have knowledge of or access to confidential information belonging to other people, particularly the members of the Institute. To ensure that the Institute is not compromised, the Institute's people must be careful to ensure that they do not breach any confidences.

Relationship with members

The members of the Institute are what the Institute is all about. Members must at all times be treated with courtesy and consideration by all of the Institute's people, including volunteers.

Relationships with suppliers

The Institute chooses its suppliers of goods and services on the basis of price, quality and performance.

Requests from the press, government officials or shareholders for information

Normally, requests from the press or governmental authorities for information about the Institute will be handled by the persons designated by the Board to deal with such requests, and failing that person, by the President. In those instances where this is not possible, the President should be informed as soon as possible of the inquiries and any responses which were given.

4 Good practice and compliance with laws policy

The Institute demands that its employees act with the utmost integrity and professionalism. Misrepresentation, dishonesty, deception, misleading and deceptive conduct and similar activities will not be tolerated.

Anti-competitive conduct

The Institute will comply with all relevant provisions of the Trade Practices Act and Fair Trading Acts. Specifically, it will not become involved in any activity that involves an unfair trade practice or other anti-competitive activity.

This means that the Institute will not:

- enter into any arrangement designed to lessen competition; or
- attempt to fix the price of its products.

The environment

The Institute will comply with the spirit and letter of its obligations to preserve and if possible improve the environment in which it operates.

Dealing with security analysts, institutional investors and journalists

Elective disclosure of non-public information may result in a breach of the insider trading rules. A person in possession of non-public information who does not him or herself engage in a transaction but does transmit such information to someone who trades on the basis of the information may be just as liable as the person who made the trade. Thus, if a report containing material non-public information concerning the corporation were communicated only to local or trade journals and if full public disclosure of the information were not made at the same time, it is possible that this may give rise to breach of the Corporations Law provisions.

Bribery

The Institute forbids any exchange of funds or assets between its people and officials of businesses and/or governmental agencies if the purpose of such exchange is to secure special concessions or consideration for that person or the Institute, such as, but not necessarily limited to, the following transactions:

- (a) payment of moneys, gifts, loans or other favours which tend to influence decisions or compromise independent judgement.
- (b) payment of rebates or kickbacks for obtaining information for the Institute.
- (c) payment of bribes to government officials in order to influence their judgement.

Foreign corrupt payments

The Commonwealth Criminal Code Amendment (Bribery of Foreign Public Officials) Act 1999 prohibits payments to foreign public officials in the circumstances set out in the legislation and accordingly the Institute forbids all Institute people from Group-making corrupt payments to foreign officials for the purpose of influencing the official to assist the Institute or amateur radio to obtain or retain privileges.

Other Federal, State and local laws

The Institute's policy is to comply with all laws and regulations applicable to the Institute. In view of the complexity of the laws and government regulations there may be instances in which the Institute inadvertently violates applicable laws and regulations. If violations are discovered, they should be reported by the Institute people who discover the violation to the President or another director and corrected as promptly as practicable.

Equal employment opportunity

The policy underlying the Institute's personnel practices is to extend equal opportunities to all qualified applicants for paid or unpaid positions without regard to race, creed, colour, sex, age or national origin, and to recruit, develop and retain individuals according to job related standards of education, training, experience, and personal qualifications.

Drug Abuse Policy

The Institute believes that drug and alcohol use is highly detrimental to the safety and productivity of volunteers and employees. The Institute must remain drug-free.

Email Etiquette

The informal nature of e-mail can create liability for the Institute because of the very nature of how e-mail is written and how it may be interpreted. Care should be taken that e-mails written on behalf of the Institute cannot cause offence to anybody, and cannot be misunderstood.

Other Policies

The Board will develop other detailed policies dealing with employment, discrimination, harassment, privacy and the use of Institute facilities for e-mail.

Book review ...continued (from page 24)

elements of this story in some of his films (p. 234).

Chapter 39 deals with the sinking of the *Titanic*. CQD was hammered out. Every amateur knows the general invitation to respond to a call, signal CQ, but the D on the end meant distress. This was the Marconi equivalent of SOS. There is not space to summarise the chapter. All I will say is that I found it hard to put down and hoped for a different ending to the one we all know!

The book provides many glimpses into the character of Marconi and Weightman states that Marconi 'was one of the great amateur inventors of all time' and that 'it is a remarkable testimony to the fragility of reputation that a man who should command such respect in his lifetime should now be relegated to comparative obscurity...' (p. xvii). This book should do much to refresh our

understanding of the life and work of Marconi. At a time when the ACA is reviewing our service and we are thinking about the future, stories of inspiration can be good for us all. I wholeheartedly recommend this book. I only found one mistake. On page 53 the letter H is shown in Morse code as dit dah dit dit dit rather than dit dit dit dit. This is either a mistake by Weightman or his publishers because one of the plates shows a love letter to Marconi's first great love, Josephine Holman, where the letter H is shown as dit dit dit dit. Weightman's book is well researched but I would like to see proper attribution of his sources in the text, making the book much more valuable to scholars. I ordered my copy through Matilda Books, Stirling, SA, but any good bookshop could obtain this book for you.

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Silent key

W.S. (Bill) Walker VK5WW

Bill Walker was born in September 1911 in Tumby Bay, South Australia. In his childhood he lived in many country towns where his flour miller father found work. When Bill was old enough to go to high school the family moved to Adelaide where he attended the Adelaide High School. His interest in radio began in 1924 while still at school. This was the year that the E class station 5DN and A class station 5CL commenced operation. Before leaving school he built several crystal sets and a multi-valve receiver. His first job in 1928 was with the Adelaide Electric Supply Company. During his time with this organisation he worked on the conversion of the supply from 210 volts to 240 volts. In his spare time Bill studied the theory of radio and Morse Code. He passed the Amateur Operators Certificate of Proficiency in 1934 and was given the call sign VK5WW.

Because of his interest in radio he was given the job of modifying customer's

radio receivers and city broadcast equipment to operate on the new voltages in Adelaide. While doing this work he learned that the PMG's Department was conducting an examination for entry to the Department's Radio Section. He successfully sat for the exam and was offered an appointment in April 1940.

Bill was associated with the National Broadcasting Service from then until his retirement in 1976. Much of his early work was with the ABC Adelaide Hindmarsh Square studios in all the technical work associated with studio operations, and outside broadcasting work. He also worked on the operation and maintenance of the transmitters at 5CK, 5CL and 5DN along with the installation of the 5MV and 5PA transmitters.

When the studio technical facilities were transferred from the PMG to the ABC, Bill went to the ABC as Shift Supervising Technician, later becoming

Supervisor Radio Operations for the ABC in South Australia. In this last position he was involved with the construction of the Collinswood Studios.

Two of Bill's sons followed him into broadcasting; Bill jnr into ABC television in Adelaide and Ross (VK2ZWT) into transmitter maintenance and operation with Telecom's Broadcasting Division.

After his retirement Bill was active with the VK5 division of the WIA and the Prospect Lions Club. After his first stroke, two years ago, he relinquished his amateur license and membership of the WIA.

Bill passed away on 9 February 2004 and is survived by his wife, Marjorie, four children, six grandchildren and three great grandchildren.

Note to editor: Even though my father was not a member of the WIA at the time of his death, he would still be remembered by VK5 members.

Ross Walker VK2ZWT

BPL (Broadband via Power Line)

The on-going debacle regarding the distribution of Internet services via powerlines is hotting up in various parts of the world.

Here is an item from a recent ANS posting that should be encouraging for everyone worried about this potential threat to all bands including of course weak signal segments like the satellite reservations. With the proliferation of "wireless" devices associated with computers - and the computer peripherals and processors themselves, the noise floor is growing as we speak in the cities and larger provincial centres. The last thing we need is BPL. You only have to switch off a few devices in your own home to realise how large concentrations of digital equipment can destroy our listening environment. "BPL" has the potential to be devastating and may well be "coming soon to a power point near you!" Here is the quote:

"The Austrian Amateur Transmitter Federation says that a Broadband over Power Line field test in the city of Linz has been cut short as a result of excessive radio interference. According to the national ham radio society, the Government Ministry for Commerce, Innovation and Technology closed

down Linz Power Company's BPL pilot project because it was generating interference on the HF bands".

This is a good omen for things in this country. It shows a very evenhanded policy on the part of the Austrian authorities. After all - they would not want to be swamped with interference reports, which would essentially be un-fixable. It's to be hoped that our ACA will view BPL in a similar light and monitor closely the amount of interference caused by radiation from the power lines and the ancillary apparatus. An unrestricted BPL system has the potential to make amateur radio operations impossible on most bands and very difficult on others. Satellite operators and other weak-signal buffs are urged to keep abreast of BPL developments in this country and be ready to support the WIA in any endeavours to counter this threat.

AMSAT-VK monthly net - Echolink tests

On Sunday 8th February 2004 another successful AMSAT-VK net was conducted via Echolink.

A dozen or so stations took part and audio quality was good from all participants. There was very little evidence of any 'packet-loss' throughout the net. So far it looks like echolink will achieve our aim of having an Australia-wide net for exchange of ideas and experiences. This has not proved possible over the years that we've run the net on HF. Even changing bands from summer to winter has not allowed a

large group, particularly VK6 to take part. During the testing phase the echolink net has been meeting on the second Sunday of each month at 0500 UTC with stations connecting to the AMSAT conference server. The HF nets are still taking place in the evenings of the same day each month with the frequencies and times alternating as per the information in the box above.

The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000 UTC with early check-ins at 0945 UTC. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900 UTC with early check-ins at 0845 UTC. All communication regarding

AMSAT-Australia matters can be addressed to:

AMSAT-VK,
9 Homer Rd,
Clarence Park, SA, 5034

Graham's email address is: vk5agr@amsat.org

Current Situation with AO-40

The echolink net gave everyone the opportunity to hear the latest news directly from one of the control stations.

Colin VK5HI filled us in on the latest news concerning the command team's efforts in trying to get AO-40 back on line. The best assessment from the team is that one of the main battery's cells failed and this caused a domino effect taking the battery voltage down to 14 volts. At that level the CPU should still be working and the team are trying to set some switching commands to prevent any further damage and hopefully put the satellite "S" band back into operation. The AMSAT-BB will be the best source of the latest information. Colin reminded everyone to keep a listening watch in case the "S" band middle beacon came back unexpectedly. The team members are anxious to receive any telemetry copied under these circumstances - so keep your ears to the sky everyone and have the log turned on. If you do hear any telemetry please zip it and send it to "ao40-archive@amsat.org".

AMSAT-UK - Space Symposium 2004

AMSAT-UK will be holding a Space Symposium at the University of Surrey in Guildford, England from 30 July - 1 August.

This 3 day event always attracts Radio Amateurs from across Europe as well as North America, Africa, Asia and the Pacific. Over a third of those attending come from outside the UK. It provides a unique opportunity to rub shoulders with the designers of the latest Amateur satellites and find out the latest news.

As in previous years there will be special beginner's sessions to teach newcomers how to get started in the fascinating world of Amateur Radio Space communications. With some satellites you can communicate using little more than a standard dual-band FM handheld.

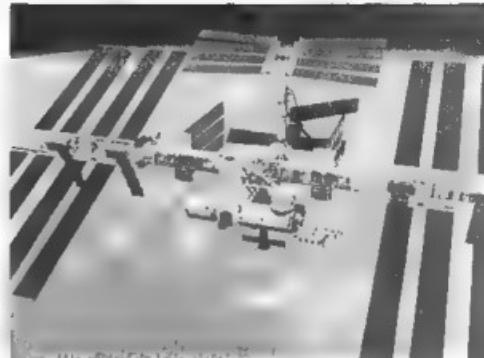
An antenna testing range will be available to enable you to check out the gain of your latest antenna, not all commercial antennas perform as well as you might think! Microwave experts will be on-hand with test equipment covering up to 24 GHz so you can have your equipment tested and receive professional advice.

There will be guided tours of the Surrey Space Centre with the satellite mission control centre and the satellite assembly facility. These tours have been very popular in previous years as they provide a unique opportunity to see satellites in various stages of construction.

The RSGB GB4FUN van, which has a fully equipped satellite station, will be available during the event for visitors to work the Satellites.

Throughout the event there is an extensive lecture programme ranging from highly professional technical presentations to basic down to earth "how to do it" type talks.

Guildford is 60 kilometres from



Central London and easily reached from both London-Heathrow and London-Gatwick airports.

Details of 2 or 3 day packages covering meals and accommodation in the University grounds are available from the secretary:

Jim Heck G3WGM

Tel: +44 1256 453869

E-mail: g3wgm@amsat.org

Website: www.uk.amsat.org

AMSAT continued

Doppler Shift Correction - a software review

So - what is there to know about Doppler shift? Hand up over there, "Yes you Jack".... "It's got something to do with a train whistle Sir".

A predictable response. Yes, it has got something to do with a train whistle. It's also got something to do with "red-shift" and ancient galaxies rushing away from us across the cosmic void.

It's got something to do with a lot of things and some of those things impinge heavily on satellite communication. There you are sitting at your receiver, antenna trained on the horizon where a satellite is due to rise and orbit overhead. You tune to the beacon frequency and confidently expect to hear the signal as the satellite rises, right? Wrong! You will need to tune slightly higher in frequency than the true beacon, why? Doppler shift.

The satellite will be travelling towards you when it rises. Not directly towards you but close enough to give you and it

a relative motion of close to its orbital velocity. It's coming at you like a steam train! So fast in fact that the signal pulses which emanate from its antenna at (say) 145 900 000 cycles per second will pass you an appreciable amount faster (again say) 145 903 000 cycles per second. That's the frequency you'll have to tune to if you want to hear the beacon.

Fine, what's so complicated about that? Nothing actually but things don't stay that way for long. Soon the satellite will be almost overhead. It's still racing across the sky but not straight at you any more. So the Doppler shift will be less and less until it reaches its closest point to you and starts to move away. At that time, just for a moment you will be receiving the beacon on its assigned frequency. There will be no relative

motion and therefore no Doppler shift, but - only for a moment.

OK so far, but now it does start to get complicated. The Doppler shift has varied from a maximum value when the satellite rises to virtually nothing as it passes closest to you. The Doppler shift is varying. In fact it is never static. Neither is it linear in function. If you drew a graph of the Doppler shift you would see that it comes out sort of "S"-shaped. It starts off high in frequency and drops until the satellite is overhead when the apparent frequency goes through nominal (at a very fast rate) and then the frequency falls below the nominal until the satellite goes out over the other horizon at which time the apparent (received) beacon frequency is

continued next page

Oxley Region Amateur Radio Club

The Oxley Region Amateur Radio Club held its first meeting for the year on January 3 at the SES Building in Gordon Street, Port Macquarie. The club has 35 members, most of whom are active on HF and VHF. The January meeting reviewed the events of the past year that included their annual Field Day held over the Queen's Birthday weekend in June and the many various community events, picnics and portable activity days. It has been a great year.

For 2004 they are planning to develop and manufacture simple hand held receivers that can be used by young

people to participate in their annual Field Day and possibly take to various schools to explain Amateur Radio. Hands-on tools are always fascinating to schoolchildren. Visitors to the Hastings are more than welcome to visit at the meetings which are held on the 2nd and 4th Friday evenings (7pm) and the first Saturday (2pm), of each month at the SES building. For more information on their upcoming events, contact ORARC Secretary, Henry Lundell, VK2ZHE on 02 6582 2242 or on internet lundell@tpg.com.au

Help wanted

VK2AYD - One of the projects my local club (ORARC) has tabled for 2004 is to build a number of simple DF receivers that can be used by school children at our annual Field Day or at School picnics and Amateur Radio demonstrations. Rather than re-invent the wheel, we wondered if any other club or person has developed a simple receiver that could be constructed, for say around \$20, and used for such purposes? Any help would appreciate, as we need to encourage the young. Please email me at davpil@midcoast.com.au or snail mail.

Thanks de VK2AYD

AMSAT continued

as low as you'll hear it on that pass and again only very slowly dropping in value. Note that it is always dropping in frequency. At no stage do you ever have to tune up in frequency to track the signal. It is always falling but never at a steady rate. Sometimes slowly like at the beginning and end of a pass. Sometimes quickly like in the middle of a pass but always moving downwards in frequency. The observed beacon frequency certainly changes from being above the nominal frequency to being below the nominal frequency as the satellite passes overhead but the change is always downwards and the rate-of-change is never steady.

Now the situation begins to get really complicated. Suppose you are listening to the passband and you hear a station you would like to contact. If you just listened you would find that his signal also moved in frequency, but in a different manner to the beacon. Why? Assuming of course that you are not operating from the same location - the satellite is moving towards or away from his station too and the satellite experiences a Doppler shift on his signal that makes its position in the on-board receiver's passband move as the pass progresses. It is then re-transmitted to you.

The signal you hear from him then will have two lots of Doppler variation

components impressed upon it. One resulting from the relative motion of the satellite and his station and another resulting from the relative motion of the satellite and your location. Depending on the position of your two locations in respect to the satellite's path these effects may add or tend to cancel each other out.

This is the rather frightening world of Doppler compensation that the newcomer encounters on first trying to "work the birds". For all the years that I have been working the OSCARS, we the unwashed have had to contend with compensating for this situation by manual tuning. Digital store and forward satellites are not so bad because no 'transponding' takes place. The uplink and downlink Doppler shifts are independent and easily accounted for with software like WISP and the KCT/T. The high orbit satellites when around apogee are much easier to cope with than the LEOs but they all present a challenge, even to the nimble-footed operator.

Fear not, dear reader, help is at hand! The problem was one which cried out for a computerised solution and now such solutions are beginning to appear. I first mentioned this problem in an AR column in 1991 but in those days home computers weren't powerful enough to cope. It was left to Ron Parsons W5RJV to first come to grips with it in the May

1996 Amsat Journal.

Since then computers and operating systems have improved and great minds have been put to work on the problem. Now you have a choice of software to use. There are a number of programs available and listed on the AMSAT web site which all claim to totally compensate for all conditions of Doppler variation and tune your lovely new transceiver for you so that once you establish contact through a transponder you should never have to touch the dial again. Your uplink signal will be tuned to keep it on the same frequency in the satellite's passband.

That's the key to the whole idea. At the same time your receiver will be tuned to the Doppler corrected downlink frequency. If both stations are using such a system, the other station's frequency controls will be automatically adjusted in the same way so that the contact can proceed with no further tuning at either end. Wonderful! As an added bonus, because the QSO frequency is adjusted to stay the same on the satellite, there is no way that any two QSOs can overrun each other as can (and often does) happen when using manual control. If everyone was using such methods all QSOs would stay put in the passband and an old ogre would finally be put to rest.

VK2 News

Tim VK2ZTM

The 'Welcome to HF QSO' Party went off well in VK2 as it did in the rest of the country. VK2WI made over 150 contacts in the first 12 hours. Divisional President Brian VK2WBK and Norm VK2TOP came down from the New England area to be operators. They were assisted by Owen VK2AEJ, Mark VK2XOF and Tim VK2ZTM. VK2WI commenced on 80 metre and remained on 3595 kHz until dawn, such was the dog pile on the channel. There were some stations we missed contacting, sorry about that. During the morning, activity moved to 40 and 15 metre.

Brian donated a book prize to the NSW Division draw for a VK2 Limited or Limited Novice Amateur who made contact with VK2WI on New Years Day. Bill VK2ZZF was the name out of the hat and he chose the ARRL Antenna Handbook. Bill has a range of HF antennas to construct at his new QTH in the Snowy Mountains region. The darker sky will assist Bill in making up his monthly star report heard on VK2WI.

A commemorative QSL card for contacts with VK2WI during the Party has been sent to most contacts in the log. There are a few new call signs that do not appear the 2004 callbook. If you made a contact with VK2WI on 1/1/04 and have yet to receive the QSL card, contact the Parramatta office with your address. Such was the success of the New Year Party, it is planned to conduct another QSO party [via VK2WI] next New Years Day.

AGM

Saturday 17th April will be the NSW Division AGM. During March the annual report will be assembled and posted early next month. AGMs are expensive operations so all members are invited to be involved in the AGM, either by attending the meeting or exercising their proxy. The meeting will be held at Amateur Radio House, Parramatta.

Lightning strikes bring changes

Lightning activity near VK2WI on 24th January knocked out a few of our services. Dural Station Engineer Mark, VK2XOF was able to restore some for the Sunday transmissions. Some problems were nuisance faults. Others were more involved and some older equipment had to be replaced due to obsolete components, including the callback transceiver on 80 metre, also the 7000 and 8525 repeaters where the microprocessor control expired. These systems were built in the late 1970s by Jeff VK2BYY and have provided sterling service. A new 7000 repeater was developed and installed in early February. It was talking well and relaying strong signals without problems. Weak signals however were being corrupted by local inband noise. On 70 cm, the second VK2RWI repeater on 8600 will be recrystallised to 8525. It will be replaced later by an another unit on a new channel of 439.900 MHz. Sydney listeners should note that 2 metre coverage of the Sunday news sessions can also be heard on 145.600 MHz. Depending upon your location there is also coverage from services surrounding Sydney. VK2RMP on 146.850 in the south, VK2RDX on 146.850 in the west and VK2RAG on 146.725 in the north. Thanks to these groups for providing their facilities for the relay, also to many clubs and groups who provide a linked or manual feed to their local repeaters for the news. There are some holes in the State-wide transmission coverage; can your group assist?

The VK2RSY two metre beacon on 144.420 MHz also expired. This unit and its companion on 52 MHz were constructed early in the 1970s. They both have an RF line up of obsolete components and this is an opportunity for an upgrade. There are plans to shift the 8 metre beacon to the 50 MHz allocation, requiring a mode change to CW from the present FSK. With other

CLEARING SALE (private)

A leading manufacturer of electronic equipment is rationalising its operations and has for sale in total or separately the following items.

- benches
- test instruments
- steel shelving
- pedestal drill
- grinder
- trolleys
- hand tools

This offering affords the serious amateur radio constructor an opportunity to purchase 'industrial strength' equipment at an excellent price.

For inspection call
Ernie on
0417 039 145

CLEARING SALE

work underway at VK2WI, it will be a while until anything can be done on the beacons. This is an opportunity for low end 6 and 2 metre operators to assist. Anyone able to design and construct transmitters for this purpose should contact the Parramatta office. They need to be rack mounted with about 25 watts output.

VK2WI needs a loan or gift of a circuit diagram or a manual for a Tait T198 UHF transceiver. If you can help please get in touch with the Parramatta office. If it is a loan, we will copy and return same to you.

Some activity to note

The next Trash and Treasure is on Sunday 28th March at Parramatta, followed by the Homebrew and Experimenters meeting in the library.

The Homebrew Constructors night will be on Tuesday 6th April. There is currently a NAOC class at Parramatta on Thursday evenings. It will conclude in July. The annual Urunga Convention on the North Coast is over Easter, April 10th and 11th.

Don't forget the local field day contests this month, an opportunity for HF operation by all. Check out the rules in the Contest Column. The next quarter roster for announcers and engineers at VK2WI will be drawn up this month. Contact the Parramatta office or John VK2JY if you can assist. The recent annual Central Coast field day at Wyong was an opportunity for Members to meet some of the Council.

The annual Oxley Region field day will be held in Port Macquarie over the June long weekend. The Oxley Region

Club recently conducted training sessions for their H and Limited members on HF operating technique. There is a new 70 cm repeater operating near Dubbo. A 2 metre repeater - on 146.675 - has been established at Bathurst.

We must thank Jack VK2GJH for submitting a regular Six Metre report to the VK2WI news session. We would welcome other DX and activity reports for inclusion. These can be anywhere from 160 metre through to the microwaves. Simply make up a news item about recent events and send it by email - vk2wi@wiansw.org.au or fax to 02 9633 1525 to reach the office by 2 pm Friday.

Remember - next month is the Divisional AGM.

73, Tim VK2ZTM.

VK6 News

Compiled by Will McGhie VK6UU

Input to: will2@linet.net.au 08 9291 7165

VK6WIA on air

Welcoming in the new operators onto the HF bands, due to the changes in the Morse requirement, was VK6WIA. Mal VK6LC, headed the station and operated 23 hours from 1300z 31st of December 2003 until 2400z on the 1st of January 2004. The total number of contacts was 211, with 118 of them being new callsigns to the HF bands. A more detailed report will appear in Amateur Radio magazine by Mal.

The VK6 WIA Council is pleased to see the changes to the Morse requirement allowing many grades to now operate on HF. The Council supported and worked towards the changes and feels the efforts put in by VK6, along with the other divisions, was time well spent.

Radio Old Timers get together

The Christmas end of year lunch time get together for the Old Timers was held in early December and 15 Old Timers and 5 ladies came along to the get-together at the Bayswater venue, full of cheer. Get togethers are held most

months and for more detail contact Clem VK6CW.

Quite short Council meeting.

January's VK6 council meeting was small, quite and short. Being the busy end of year for matters other than Amateur Radio, there was correspondence in and out, Treasurer's report and some general items. The meeting, which begins at 7.30 PM, was all over and done by 8.20 PM, perhaps a record. Our thanks to the Council for the past year. Meetings are held on the first Tuesday of each month and usually not ending much before 11 PM. All are welcome but please contact Neil VK6NE or Christine VK6ZLZ, as seating is limited. Please book your sandwich if you are attending the AGM on April 17th. Email to vk6@wia.org.au

February Council Meeting

The VK6 WIA monthly council meeting was back in full swing with the meeting starting at 7.30 PM and not finishing till 22 30PM. Some of the items covered

were:

VK6 WIA assist WARG by paying some of the repeater licenses, as the VK6 WIA weekly broadcast is carried on several repeaters.

Due to a change of amateur radio course venue, a saving in the cost of rental premises has been achieved.

Correspondence from VK7 concerning possible frequency conflict between the existing Perth repeater and the proposed VK7 (Hobart) 29 MHz repeater. VK7 would be prepared to operate a repeater on a non-interference basis with the Perth repeater if there is no objection.

In all about twenty items were covered. The evening ended with Mal VK6LC giving a computer driven presentation of his DX-Vacation to the Maldives last year.

Repeater License Costs

WARG, The West Australian Repeater Group, who have installed and operate 15 repeaters in VK6, have just paid the license renewal for all 15 repeaters for the next 5 years. The total cost \$3,894, of which \$1,509 was paid by VK6 WIA for use of 7 repeaters, which broadcast the weekly VK6 news.

VK4 News

From Alastair Elsik VK4MV

Qnews

RAT deprived of Electrons

A very active electrical storm associated with monsoonal activity decided that Mount Stuart near Townsville would be a great place to perform 600 plus electrical discharges during the evening of Friday January 9th 2004.

Unfortunately Mount Stuart is the location for the TARCinc repeater site which amongst other things houses the VK4RAT repeater systems, TAC08 UHF CB Repeater and the VK4RTL beacon systems. An inspection during Saturday January 10th on top of the mount revealed that ABC Radio National had been taken off air, there were many throbbing diesel emergency power units operating and that the entire top of Mount Stuart was without mains power supply. The only damage to the TARCinc site appeared to be that a set of lazy standby batteries had only held up the voice repeaters for 5 hours instead of the designed 200 hours. Replacing the dead batteries with a fresh one brought the repeaters back up on air.

The Sunday January 11th QNEWS transmissions in Townsville were announced on the VK4RAT VHF repeater and then undertaken on 146.500 MHz simplex so as to preserve the repeater batteries for other communications. A visit to VK4RAT on Sunday afternoon revealed that mains power had been restored to all the Mount Stuart sites and that the TARCinc site batteries were recharging nicely.

What caused the mains outage?

Lightning strikes ignited two power poles about two thirds of the way up Mount Stuart and caused the power lines to go to ground. Near the top of the mount, a branch was blown across the lines causing further mechanical damage. Difficult terrain and a soggy mountainside hampered the ERGON crews as they completed repairs to the vital electron lifeline.

Radio and Electronics School

Adam VK4KSS, Radio and Electronics School Course Manager reports 2004 is already shaping up to be a big year for the Radio and Electronics School. The school is approaching its 75th student since January 1st. Of this, over 70% of enrolments have been for the Novice Fast Track Multi Media Course. When you consider that in 2003 the total enrolments for the school were 565 students. You can appreciate how much of an effect the relaxation of the Morse code requirement has had. Many new students have indicated during the enrolment process, that the only reason they put off becoming a ham - was because of the CW requirement. Interestingly, those same students have said that they want to learn and use CW once they become licensed.

Another indicator to this phenomenal upturn in student enrolments, is the increase in visitors to the School web site. The school web site has enjoyed an average of 600 visits per week over the past 12 months. However, in the weeks leading up to January 1st, and the three weeks since, visits have increased to well over 1000. The student message board has also seen an increase in activity with over 850 members and an average of 300 messages per month being posted, with most messages having several responses within an hour or so - this has proven to be an excellent tool

for the students. This renewed interest in amateur radio has all come about because of the hard work put in by the WIA and many interested individuals. I think you will all agree that it is the best thing that has happened to the hobby in quite some time. Why not visit our web site at <http://www.radioelectronicschool.com> and have a look at the courses we have on offer?

Northern Repeater News

Rain sprouts new Northern Repeaters and changes the frequencies of some too! The wet in the north not only has the grass growing into jungle at a rapid rate but has also brought on some new and changed repeater services.

From the TARCinc Technician Don VK4MC comes news of a new repeater at the clubs Mt Stuart site which will provide a challenge for all those in the region to suitably equip themselves with rigs and antennae to work. VK4RAT 23 cm Repeater Mt Stuart 1273.500 MHz with plus 20 MHz offset

From the Cairns Amateur Radio Club president John VK4JKL comes news that there has been a frequency change to the VK4RCA UHF voice repeater at Mt Yarrabah to prevent it being constantly triggered by so called "low interference potential devices" a good 10 km away in downtown Cairns. VK4RCA 70 cm Repeater Mt Yarrabah 439.850 MHz with neg 5 MHz offset

Wireless Institute of Australia SA & NT Division Inc.

The AGM will be held on Tuesday 27th April 2004 at St Johns Hall, Arthur Street, Unley commencing at 7:30 pm.

Nominations are called for the position of President, Secretary, Treasurer and Minute Secretary.

Nominations are to be in writing and be received by the Secretary prior to the commencement of the meeting. Nominations may be sent to the Secretary, GPO Box 1234, Adelaide, SA 5001.

All nominations to be proposed and seconded by financial members and signed by the nominee as accepting the position.

Become involved and have your say in the running of the WIA!

Regards, 73, Peter Reichelt, VK5APR.
Hon Secretary. SA & NT Division WIA.

VK7 News

Justin Giles-Clark, VK7TW Email: vk7tw@wia.org.au
Divisional Web Site: www.wia.org.au/vk7

Divisional News

The Divisional Annual General Meeting will be held on 13 March 2004 at 11 am in the Alannah TAFE College in Launceston. It will be followed by a special general meeting and by a buffet lunch. The AGM this year is hosted by the Northern Branch. Please make an effort to attend this very important event.

An analysis of the VK7 Divisional broadcast callback statistics for 2001-2003 has resulted in the following averages: 58 callbacks each broadcast (doesn't include Northern & NW repeaters) of which the average for Southern Repeaters = 28, UHF CB Channel 15 = 10 and all HF frequencies = 21.

Branch Meetings

North

The Northern Branch's AGM was held on 11 February 2004 and office holders will be reported in the April edition of AR Magazine.

North West

The North West AGM was held on 4 February 2004 and was chaired by the Secretary, Ron, VK7RN. Ron comments "It was great to have some of the younger and newer members in attendance, unfortunately we could not get any nominations for President, Vice-President or Secretary and as the filling of these positions is vital to the running of the branch I had no other alternative than to move that this branch go into recess until people could be found to take on these positions".

South

The AGM of the Southern Branch AGM was also held on the night of 4 February with about 25 members and visitors attending. Reports were received from most office holders and I thank those people for their efforts during the past year. As President I found my 2003 report very easy to write with all the things that members have done throughout last year. It is a credit to the Branch, thanks it makes my job so much easier!

The executive for 2004 is President, yours truly, Secretary, Dale, VK7DG and Richard, VK7RO. A full list of office holders is available on the Divisional web site. A vote of thanks was recorded for Brian, VK7RR and his tireless work on maintaining the VK7RIN, VK7RTC & VK7RAF repeaters.

Our guest speakers for the night were Barry McCann, VK7TBM and Mike Hooper, VK7CCX from the Tasmanian Small Marine Radio Group (TSMRG). For those who don't know the Southern Branch has a strategic partnership with TSMRG and they are about to start operating from the Domain clubrooms. In fact Wednesday night was an historic occasion as Mike did the first sked from the new operating room.

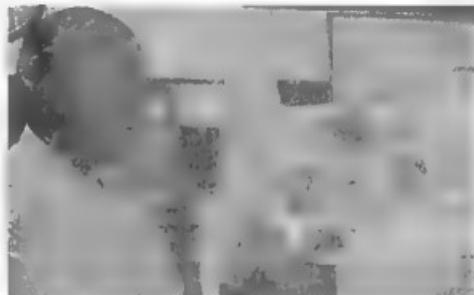
Barry outlined the formation of TSMRG from the old OTC/Telstra Marine Radio network. Yes, the Domain is returning to its original purpose! The

operating callsign is Coast Radio Hobart and they monitor 2182, 4125, 6215, 8291 kHz as well as the VHF marine bands.

TSMRG provide regular weather reports and have a sophisticated DTMF position logging safety system which logs radio ID, location and time on the computer at the operating position.

Mike then outlined the extensive technical work he has done on the computerised control system for the various radios they operate. This involved hardware control and visual basic written screen based control systems. Extensive use of packet radio is used to control remote transceivers at the various locations.

Thanks to Barry, Mike, Stu, Chris and Robert for coming along and sharing what TSMRG is all about.



Barry McCann, VK7TBM explaining the coverage of the Marine VHF network around Tasmania



Mike Hooper, VK7CCX demonstrating the digital radio control system that he designed and built and TSMRG operators use

Contest Calendar March - May 2004

6/7	Mar	ARRL DX Contest	(SSB)
13/14	Mar	RSGB Commonwealth Contest (CW)
20/21	Mar	John Moyle Field Day	(CW/SSB/FM)
20/22	Mar	BARTG HF RTTY Contest	(RTTY)
20/21	Mar	Russian DX Contest	(CW/SSB)
27/28	Mar	CQ WW WPX Contest	(SSB)
3-4	Apr	Elettra Marconi Contest	(CW/SSB/RTTY)
10/11	Apr	Japan International DX Contest	(CW)
17	Apr	Holyland DX Contest	(CW/SSB)
17/18	Apr	GACW CW DX Contest	(CW)
17/18	Apr	YU DX Contest	(CW/SSB)
23	Apr	Harry Angel Sprint	(CW/SSB)
24/25	Apr	SP DX RTTY Contest	(RTTY)
1-2	May	Ten-Ten Intl. Sprint QSO Party	(CW/Digi)
1-2	May	ARI Intl. DX Contest	(CW/SSB/Digi)
8/9	May	CQ-M Intl. DX Contest	(CW/SSB/STV)
15/16	May	King of Spain Contest	(CW)
22	May	VK/trans-Tasman Contest	(SSB)
29/30	May	CQ WW WPX Contest	(CW)

Australian Contests 2004

Please note the following in your diaries for 2004—

1. As a result of suggestions about some of the VK contests, it has been decided to try some of the events at times other than Saturdays. Also, some of the contests will test new ground by expanding their rules to some extent.

Please read the rules carefully for these changes, especially (a) the change of addresses for sending logs for the John Moyle Field Day (see rules below), (b) change of dates for Harry Angel Sprint (see rules below) and QRP Day later in the year.

2. The date of the Remembrance Day Contest remains unchanged as the weekend nearest to the 15th August each year (Victory in the Pacific Day in World War II).

Dates of VK Contests for 2004

(Some dates yet to be confirmed)

20/21	Mar	John Moyle Field Day	(CW/SSB/FM)
23	April	Harry Angel Sprint	(CW/SSB)
22	May	VK/trans-Tasman Contest	(SSB)
5	June	VK/trans-Tasman Contest	(CW)
12/13	June	ANARTS Contest*	(RTTY)
3	July	Jack Files Contest*	
17	July	VK/trans-Tasman Contest 160 metres	
			(CW/SSB)
6	Aug	QRP Day	(CW/SSB/FM)
14/15	Aug	RD Contest	(CW/SSB/FM)
21/22	Aug	ALARA Contest*	
2	Oct	Oceania DX Contest	(SSB)
9	Oct	Oceania DX Contest	(CW)
13/14	Nov	VHF Spring Field Day	(CW/SSB/FM)
26	Dec	Ross Hull Memorial VHF Contest	

*unconfirmed at time of writing

Harry Angel Memorial Sprint

1100z - 1246z Friday 23 April, 2004

This is the sixth year of a Contest to remember VK's oldest licensed operator, Harry Angel. Please note the time length of the Contest - 106 minutes, Harry's age when he died in 1998. It is open to all HF operators.

Object is to make as many contacts as possible on band 80 metres, using modes CW and SSB.

Categories: Single Operator (CW, Phone, Mixed) and SWL.

Frequencies: CW: 3500 - 3535 kHz, Phone: 3535 - 3700 kHz.
Contacts in DX window not permitted.

Exchange RS(T) and serial number starting at 001.

Score two points per CW QSO and one point per Phone QSO.

Stations may be worked once only per mode.

Logs must show time UTC, callsign worked (both callsigns for SWLs), mode, RS(T), serial numbers sent and received for each QSO.

Send summary sheet showing name and date of Contest, name and callsign of entrant, category entered, address, points claimed and a signed declaration that the rules and spirit of the Contest were observed.

Send logs to Harry Angel Sprint, 363 Nepean Highway, Chelsea, 3196, by Friday, 21 May, 2004. Logs may be sent via email to: vk3js@vkham.com

Spring VHF-UHF Field Day 2003: Results

Contest manager: John Martin VK3KWA

The November 2003 Field Day didn't see the usual level of activity. Things were looking good in late October with good weather and even a major aurora. But by the time the Field Day came along, the weather was awful and the propagation had disappeared. So we had less than the usual number of stations in the field or operating at home, and only two stations on bands above 1296 MHz. Particularly hard hit were the multi-operator sections.

On the positive side, we had section winners from three different states, and the first VK7 log in some years.

As I compile these results, the Summer Field Day has also been and gone, and conditions and activity were very much better than in November. Considering the unreliable weather in early spring, it could be worthwhile to consider moving this event towards the end of the month. Any comments gratefully received. You can contact me QTHR or at jmartin@xcel.net.au.

Call	Name	Locator(s)	8 m	2 m	70 cm	23 cm	12 cm	9 cm	5 cm	3 cm	TOTAL
Section A:											
VK4OE	D. Friend	QG52, 62	-	306	410	496	330	-	-	-	1542
VK3KAQ	A. Martin	QF21, 22, 23	69	375	315	352	-	-	-	-	1111
VK5AR	A. Raftery	PF94	21	219	355	-	-	-	-	-	595
Section B:											
VK5AIM	S. Mahony	PF95	43	192	320	344	-	-	-	-	899
VK3KAQ	A. Martin	QF21, 22, 23	56	327	235	256	-	-	-	-	874
VK3YDK	K. Allan	QF22	54	237	370	-	-	-	-	-	661
VK5AR	A. Raftery	PF94	21	216	355	-	-	-	-	-	592
VK7MO	R. Moncur	QE37	-	171	190	168	-	-	-	-	529
VK3HV	G. Francis	QF31	49	183	295	-	-	-	-	-	527
VK6ZUC	A. Russell	PF94, 95, QF04, 05	-	174	280	-	-	-	-	-	454
VK5OQ	K. Gooley	PF94	24	89	125	178	-	-	-	-	394
VK4EV	R. Everingham	QG62	-	105	115	-	-	-	-	-	220
VK5MX	M. Miller	PF95	Check log								
Section C:											
VK3ATL	Geelong ARC	QF21 (Operators C. Gnaccarini VK3BRZ, L. Sim, VK3ZLS, D. Learmonth VK3XLD)	118	498	740	496	480	-	-	-	2312
Section D:											
No entries											
Section E:											
Home Station, 24 Hours											
VK3HZ	D. Smith	QF22	51	375	555	464	-	-	-	-	1445
VK3ZUX	D. Johnstone	QF31	73	354	440	184	-	-	-	-	1051
VK3UH	L. Mostert	QF21	92	345	470	-	-	-	-	-	907
VK3AEF	J. Bywaters	QF03	22	105	190	184	-	-	-	-	501

Finally my apologies for taking so long to get these results out - the last couple of months have been quite hectic. I'll try to be more punctual next time.

VHF/UHF - An Expanding World

David Smith VK3HZ - vk3hz@wia.org.au
Leigh Rainbird VK2KRR - vk2krr@telstra.com

Weak Signal

David Smith VK3HZ

After the bumper start to the year, the weather in the south of the country turned cold and band conditions went with it.

Several openings have occurred across the Bight from VK6 to VK5, but none have progressed as far as VK3. On the evening of 11/1, Bill VK5ACY and Colin VK5DK worked Wally VK6WG on 2 m at S9+. At the time, Colin was hearing the 70 cm beacon near Albany at S9.

There have also been a few of VK2 to

ZL openings. Gordon VK2ZAB reports that on the afternoon of 25/1, he worked into ZL via what may have been a sporadic E opening. He and Guy VK2KU worked Nick ZL1IU on 2 m at S9+, but nothing was heard on 70 cm. Adrian VK2FZ and Dave VK2AWD also managed to work Nick but signal strengths were up and down quite wildly. The opening lasted for only about 30 minutes.

Then on 6/2, this time in a tropo

opening, Gordon again worked Nick but this time on 2 m (S9), 70 cm (S5) and whistles heard on 23 cm. On 2 m, he also worked ZL3TY, ZL3TJZ and ZL2TAL. Then later that day and next morning, Ross VK2DVZ reports working ZL1IU, ZL3TJZ, ZL3TY, ZL2TAL, ZL2IP, ZL1TPH, ZL1BT and ZL1AOX on 2m; ZL3TY, ZL2TAL, ZL1TPH, ZL1BT, ZL1IU, ZL1AOX, ZL1TBG and ZL2IP on 70 cm; and ZL1IU, ZL1TPH and ZL1AOX on 23 cm.

VHF/UHF Summer Field Day

The VHF/UHF Summer Field Day on January 17 and 18 saw a larger number of participants, in VK3 at least. The weather was a little better than during the Spring Field Day (no snow at least) but still fairly cold and rainy. Operating techniques seemed to be much improved also. Most stations used xxx.150 or xxx.200 as call frequencies and QSYed away to have a contact. At times, I was having difficulty finding a slot to have a contact. I operated from home and worked VK1, 2, 3, 5 & 7 on 2 m and VK1, 2, 3 & 5 on 70 cm. I counted 7 stations active on 23 cm too.

However, from reports received, it appears that activity in other states was fairly low. A number of stations report going portable and hearing not much

activity at all, even from home stations. Barry VK3BJM battled bad weather and equipment problems but, nonetheless, reports having a great time. He provides these words of wisdom: "If you are in VK2 or 4, and are thinking it's not worth the effort - don't be discouraged. You're in the vanguard of operators who, with persistence, could re-ignite portable activity in your region - and portable activity isn't just for Field Day contests. If things didn't go well for you in the Field Day, look at what exactly didn't work well. Then identify why those things didn't go well, and from there address how to change that in the future. Was your operating site not optimal? Was propagation lousy? Could

your operating window be better? Could more home stations have been encouraged to be on air? Could more stations have been encouraged to get out on a hill somewhere in your region - regardless of how good or bad their field station may be. Some things can be worked upon and improved - some cannot. Propagation (or perceived lack of it) will always be a challenging part of amateur radio, and a lack of troppo is simply a cue to start looking seriously at the other propagation modes available, and figuring out ways to exploit them." So keep up the portable activity or, if operating from home, please give the portable stations plenty of contacts for their efforts.

Beacons

There's been lots of activity with beacons this month.

Chas VK3BRZ reports that he and David VK3XLD have installed the new VK3RGL 70 cm beacon on Mt Anakie near Geelong. It is running on 432.530 MHz using FSK ident at +700 Hz. Power is 20 W to each of two 5-element yagis, one pointing west and one to the northeast. The beacon switches transmission between the two antennas at 15 second intervals, adding either "W" or "NE" to the end of the ident depending on the active antenna. Thanks also to Lee VK3PK who wrote the ident controller program. Chas is

looking for signal reports, which can be sent to him by email at CGNACCAR@gordontafe.edu.au.

Wally VK6KZ reports that the VK6RST Mt Barker beacon on 144.564 MHz has been installed, thanks to the assistance of Brian VK6YAU and Wally VK6WG. It uses FSK identification and 15 W of power into an omni-directional antenna. Thanks to Cec VK6AO for the antenna and Don VK6HK for the transmitter, on behalf of the WA VHF Group (Inc). Mt Barker is about 50 km north of Albany. Wally welcomes reports to him by email at wjhowse@bigpond.com.

Wally also advises easterners to listen

for VK6RSW Augusta on 144.562, 432.562 and 1296.562 MHz and for VK6RST from Mt Barker on 432.564 MHz and 10368.564 MHz, both with antennas favouring VK3/5. Don't overlook Perth 144.460, 432.460 and 1296.460 MHz and Bunbury 144.560 MHz. 5 and 10 GHz beacons are also on air from Perth but are unlikely to be heard in eastern Australia.

Rod VK2TWR reports that the VK2RSF Beacon on 144.414 MHz (FSK) is back on air. It is located on a very exposed site at Hudsons Peak, south east of Cooma, and the pair of big wheels on the mast have had a beating of late.

Reports are welcome to Rod by email at marestails@bigpond.com

Jeff VK8GF has advised that the VK8RAS beacons at Alice Springs are working fine. The 2 m beacon on 144.485 MHz is about 300 Hz low and the 6m beacon on 50.046 MHz is also low. Both run Phillips FM828s at 20 W into vertical whips.

Incidentally, Jeff also mentions that his 2 m station is still working, although he hasn't had any contacts now for several years - the last one was into Sydney. He has worked all states on Es except VK1, plus worked into Japan on evening TEP. He runs an Icom IC275 to a pair of 4CX250B's and 16 el ATN long yagi. He monitors 144.1 when in the shack.

In recent VK2 news, it was mentioned

that the 6 m and 2 m VK2RSY beacons at Dural have both been put out of action by a lightning strike. Apparently the 2 m beacon equipment is so old that it would be more feasible to build a new beacon than to repair the old one. The antennas are also rather sad. Therefore, the Dural Technical Committee is looking for volunteers to build a new beacon (and how about a 70 cm beacon while we're there).

Finally, there should shortly be a new beacon on 2.4 GHz in the Melbourne area. Alan VK3XPD has been rummaging in his extensive junk box and has put together a setup that should deliver 5 to 10 watt to an Alford slot at his QTH (also the site of the VK3RXK 23 cm beacon).

GippsTech 2004

From Peter VK3KAI,

a note about an event not to be missed by the serious VHF/UHF weak signal operator:

The seventh annual Gippsland Technical Conference - GippsTech2004 - will be held on July 3 & 4, 2004, at the Gippsland Campus of Monash University, located at Churchill, Victoria.

Further details available from <http://www.qsl.net/vk3bez/>

Offers of presentations welcomed - contact Peter VK3KAI at vk3kai@qsl.net

Digital Modes

New Member VK7MO

Congratulations to Charlie VK3FMD on completing the first VK EME digital contact on 432 MHz with Al, K2UYH. After much testing and many tries, Charlie found that JT44 worked much better than JT65b on 432 MHz EME. Following Chas, VK3BRZ, working HB9Q on CW, tests were run with HB9Q in February on JT65b and JT44. Rex VK7MO, (single 17 element yagi and 120 watt) and David VK3HZ (random) completed on JT44 with signal levels as good as -8 dB in an SSB passband. Again JT65b gave very poor performance with only one decode in 10 minute whereas JT44 gave almost perfect decodes for over half an hour. HB9Q runs a 15 metre dish and high power and these results

show he can be worked by single-yagi, 50 to 100 watt stations thus opening 432 MHz EME opportunities to many in VK.

Welcome, Ron, VK4KDD and Andy, VK2EAH to the 2 metre FSK441 activity sessions. Weekend activity sessions are held on 144.230 from 0700 to 0800 Vic/NSW time each Saturday and Sunday morning. New stations are encouraged to join in with VK7/3/5 transmitting first 30 second of each minute to the North and VK1/2/4 transmitting second and to the South. Typically one or two 2 metre contacts can be made over the range 800 to 1800 km during each session. After the session, come on 40 metre, 7085 kHz or nearby, and share your results.

During January, Bob ZL3TY and Rex

VK7MO have been testing FSK441 meteor scatter on 2 mtrias to look at the best hot spots. The hot spots are 10 to 15 degree either side of the direct path. It was found that by focussing on the same hot spot with Bob's high gain 4 yagi array, VK-ZL 2 metre contacts can be regularly completed in 5 to 10 minutes. Over 100 single tone pings were recorded in 30 minutes on this 1941 km path. Interestingly the Southerly hot spot gave better results by a factor of around 2 to 1, which is the opposite of the advice provided by WSJT. Further tests will be carried out later in the year to see if the Southerly hot spot is consistently the best on this path.

2 m & 70 cm FM DX

Leigh Rainbird VK2KRR

After the fantastic openings of December in the south, January has been a big disappointment and far from what was anticipated for the FM DX scene. While the first half on January had some interesting occurrences, the second half of January was pretty well terrible in most areas of Australia.

The first half on January saw typical summer weather in the south, being very hot and at times over 40 deg C. But we are not really getting good high-pressure systems into the Great Australian Bight, they are all being mostly distorted and broken by cold weather fronts. The pressure maps were shocking in the

second half of January with small highs and lows all over the place. Good for rainfall, not good for DX. There has also been a low-pressure trough down the eastern side of NSW and the west of W.A. This has been causing unsettled weather, storms, rain and wind, not good for ducting. If you had looked at a lightning tracker map during the second half of January you would have noticed lightning strikes covering a great deal of area especially in the eastern half of Australia.

To get the ball rolling, on New Years Day there was an opening in the south

east of the country. I don't have too many notes written for this one, but conditions were open from here to the Adelaide area. Adrian VK5ZSN was worked on Summertown 438.125. Had an interesting chat via the Barossa Valley 438.425 with some new comers to AR, mainly Josh VK5HKS second operator and Sam, the owner of the callsign. Lets hope that Josh passes his next exam attempt and we will have another new callsign to try and work.

On the 2nd there were two separate openings, one in the southeast and the other from New Zealand across to the

Sydney area. From here conditions were not all that good, but a number of repeaters were worked from VK5. Ray VK2ZOR at Tocumwal was able to work 5RAD Crafers 2 m repeater @ 628 km.

Brian VK5UBC submitted the following great report:

This morning 2/1/04 conditions on 2 m were excellent from my portable QTH at Corny Point, southern Yorke Peninsula SA (PF85MC). I turned on at 7.30 am SA time and all the SE repeaters were S9 so I tried the Tasmanian repeaters. I could immediately hear Mt Barrow 7RAA and Mt Duncan 7RMD. 7RAA was noise free so I put out a call and VK7KY, 5 km east of Burnie answered. I then worked VK7LCW who was also readable 5 on reverse but Peter did not have time to make the simplex contact. Following these contacts VK7JG mobile in Launceston called and was worked.

At about 8.30am the repeaters faded but Tower Hill repeater VK7RNE was audible with VK7's talking on it. I could not break in but could hear them talking on the repeater for about 1/2 hour.

All the above Tasmanian repeaters are over 1000 km from my location.

Also worked VK5WC at Millicent, VK3LY at Nhill and VK5ZAI via the Mt Gambier repeater (approx 500 km).

Various Victorian repeaters have been workable from here in the last couple of days and did work Leigh VK2KRR yesterday via several different repeaters.

I have 2 x 5 element yagis at 25 feet and running 20 watt.

Also on the 2nd we had a number of reports of FM contacts from the VK2 coast to New Zealand.

Brian VK2UBF in the Bulli area around Wollongong made it to the Greymouth 146.950 repeater in NZ. Brian's distance worked is around 1978 km. Brian was also heard unknowingly making it to the Canberra repeater on the same frequency at times. Bob ZL3ADH in Greymouth NZ, was heard working repeaters in the Wollongong area on 2 m. He had also made it to the Batemans Bay repeater on 146.675, around 1950 km. Later in the evening Bob was heard trying to call into one of the Sydney repeaters, which was connected to the IRLP Virtual Pub. A few overs were heard from Bob, but he was not able to hold in there, but it did impress the listeners of the Virtual Pub group all the same. Not sure if Brian and Bob linked

up for a simplex contact, but seems it would have been possible.

Vic VK2UVP, north of Newcastle also reported good conditions today along the coast. While Vic was unable to work across to NZ on his handheld, he did hear ZL3ADH on the Maddens Plains repeater near Wollongong. Vic was easily able to get to the Wollongong repeater from his 2 watt handheld and reported a 5/9 signal back from the repeater over the 250 km path.

Again on the 2nd, Steve VK2KFJ noted ZL1DK working VK2RHR 146.625 near Mittagong from 3 pm to 4.45 pm, ZL1DK was also on other Sydney 2 m repeaters after this.

On the 3rd, Steve also reports - approx 10 pm, coastal ducting between Sydney to far south coast VK2 and also inland to Goulburn, worked 438.325 at Goulburn using my handheld inside the house at S7. Also found 146.750 Ulladulla S1. Noted 146.650, VK2RDX, Mt Bindo, normally about S1 was way up to S9+20.

In addition to Steve's report, from here at The Rock I also noted a number of Sydney stations reaching the Canberra 146.950 device quite easily at around the same time.

On 14th January there was an opening in the south east of Australia. Wayne VK2PDW who was mobile in Wagga Wagga, decided to go to the top of Willans Hill, in the center of town. From

there Wayne was able to work as far as the Port Augusta repeater VK5RAE, at 929 km distant.

From The Rock I was able to get as far as Port Lincoln on 2 and 70 @ 1026 km. Port Augusta was very easy to work with only 2.5 watt @ 913 km.

Found on 146.500 and worked on simplex from here, were VK2FW, Ray from Orange, he was S9+30dB. And Brian VK5UBC at Gawler SA was a weak 4/4 signal @ 764 km.

Chris VK3VSW from Geelong went portable in the Grampians area during the mornings of the 17th and 18th of January, the Summer VHF Field Day weekend. Unfortunately for Chris conditions were terrible. Chris was running a handheld with 5 watts and small yagis on both 2 and 70. Chris made a number of shorter distance contacts and the furthest being to VK2KRR @ 456 km on both bands.

In the morning of the 25th January, Colin VK3LO in Melbourne was worked by VK2KRR on 146.500 simplex. Also a good jump by Graham VK3JGL in Bendigo into Canberra's 146.950 repeater where Graham worked VK2JSK in Orange. Distance for Graham was 425 km, while for VK2JSK it was quite a bit shorter.

That's about it for this month. Please remember to send through any 2 and 70 FM DX reports to Leigh VK2KRR at vk2krr@telstra.com.

er

Silent Key

Franklyn Pain VK2DYP BE, FIE (Aust)

1910–2004

Franklyn Pain's long life came to a peaceful end on the 17th January 2004. He was a chartered professional engineer and retired from the staff of the Sydney Water Board as chief mechanical engineer in 1970. He had a keen interest in radio communication from his boyhood but did not become a licensed amateur until 1979 - initially as VK2NAP. However he soon afterwards obtained his full call and for the remainder of his life amateur radio activities brought him many hours of pleasure and created for him a wide circle of friends.

He was a strong supporter of the WIA and the Central Coast Amateur Radio Club and a member of the RAOTC. He became a member of a group of veterans who would meet regularly over lunch at the Parramatta rooms. He was a faithful member of "Col's Net" (5 pm - 7.095 MHz) and greatly enjoyed acting as net controller occasionally. That his terminal illness was accompanied by an inability to speak was a source of much frustration to him.

Vale, OM.

HT

Spotlight on SWLing

Robin Harwood VK7RH

Cuts across the board

Further drastic cuts to shortwave broadcasting are due to come into effect when the new broadcasting period commences on 27th March. It was announced on February 3rd that the VOA will end regularly scheduled programs in Bulgarian, Estonian, Czech, Hungarian, Latvian, Lithuanian, Polish, Romanian, Slovak, and Slovenian, along with many of our broadcast feeds to affiliate stations in Central and Southeastern Europe. This action, which took effect on Friday, February 27, 2004, is in accordance with the recently passed 2004 federal budget, which endorsed the US Administration's proposal to close these services. As well the VOA News Now format will be further reduced from 19 hours to 14 hours as from the end of the current broadcasting period in October.

The religious broadcaster, Adventist World Radio, has been airing programs over shortwave for decades but from January dramatically reduced their output due to budgetary cuts. The future of WSHB in Cypress Creek also is doubtful. This station has programming on behalf of the Christian Science Movement in Boston. They have utilised

relay facilities from the Far East of the Russian Federation and also Taiwan but these ceased in December. WSHB has been on the market for some time.

External broadcasts from All India Radio may also be another shortwave casualty. A recent government evaluation of their effectiveness was very scathing. I also have wondered if AIR ever monitor their program output as the modulation or audio quality can vary wildly during the program. Relays of the domestic service and programming to the subcontinent will continue over shortwave.

The BBC News and Current Affairs programming came under the spotlight after a Royal Commission severely criticised a report by Andrew Gilligan on a statement relating to the Iraqi War and Weapons of Mass Destruction, after interviewing a top scientist who later committed suicide. The Hutton Inquiry findings led to the resignations of the BBC Chairman, its Director-General as well as Andrew Gilligan. Although it was primarily a domestic story, international ramifications saw this item extensively carried by many international broadcasters, with the

primary emphasis on the future of the BBC's independence and impartiality.

Incidentally the BBC World Service is now available here in my city from midnight to dawn over the ABC Newradio Network as well a translator of 7RPH On 106.9 FM. The latter must be using a loop delay because it is between 10 to 30 seconds behind the ABC Newradio feed. I also note that the Newradio network uses other international radio broadcasters at various times.

My e-mail address of vk7rh@wia.org.au is active after some unexpected hiccups outside of my control. For some time I was puzzled my mailbox was empty but it was due to a change of the mailserver at the website. I must apologise for the delay in answering my e-mail but it has now been rectified and answered.

Don't forget that on the 27th of this month, most of the Northern Hemisphere goes on to daylight summer time. This means that many HF stations will be altering their frequencies and transmission times.

Well that is all for now. Until next time, good listening from VK7RH

HT

Intruder watch

Henry VK8HA

The 24 MHz CODAR interference has not changed, still very low level and no problems with working DX on the 24 MHz band.

The 7 MHz CODAR/OHR has not been heard at Humpty Doo, PH57NK. Did have a 24 hour watch for 15 days, but NIL Cedar heard. VK6WIA Sunday morning Broadcasts could be heard at very low level.

VK6XW, Karl, reports of logging 44 Indonesian SSB Stations on 14 MHz.

84 Chinese Stations on 14 MHz SSB.

60 Other Asian SSB Stations.

The 14144 Frequency Has Chinese Language SSB all day.

VK4ZRT, Wayne, reports 10 unidentified SSB, Digital and Broadcast Stations on 14 MHz.

14250 North Korea still active from Pyongyang Broadcasting.

On 7100 Broadcast Station, possibly African, S9 + 40dB in VK4...

A2 and A7 D USA Stations with an S9 Signal or maybe Europe ??

On 28 7 unidentified Asian SSB Stations logged. (most likely Chinese??)

In Humpty Doo the Chinese Packet is very strong on 14015 and 14260.

Sometimes idling with a very NOISY Carrier, on 14260 it also sends some other bursts of Digital Info.

On 14370 Indonesians on SSB being 'Jammed Out' and it works as they have to stop transmission!

VK2BHO, John, reports Interference from 'Voice of Korea' on 10124 MHz on the 22nd of January 2004.

Good Luck Hunting and see you next month.

Cheers and all the best.
vk8ha@octa4.net.au

Pileups are dangerous

HB9CIC Josef

Published in "Old Man" September 2002

Translated by Mike Krochmal, VK3KRO

According to a study by the Academy for Wireless Communication (AWC) of the University of Brainless (UK), which was published at the end of June 2002, the appearance of short-wave pileups results in a significant hazard for a fringe group of our society. This fringe group includes persons in the amateur fraternity who call themselves "DXers". The results of this study now show unequivocally that it is possible for a multitude of extremely disturbing behaviour disturbances, complex illnesses and massive personality changes to occur. Independently of the age, origin, environment, culture and intelligence of the persons concerned. Material which hitherto has often been classified as baseless gossip has now been documented scientifically for the first time.

As an introduction, we will provide a definition of the concept of the "Pileup". This is a temporary phenomenon which may be of brief or extended duration, and may last for up to a day. If an amateur radio station from a very rarely activated country or from a newly constituted island commences transmissions, the mathematically normal distribution of the active stations on the band undergoes a profound shift. The number of stations in the vicinity of the frequency of the rare station rises instantly and massively. This effect is augmented by several orders of magnitude if the station concerned is reported in the so-called "DX-Cluster" systems.

It is precisely in this phase that the endangered fringe group now forms. As a result of an exothermic short-circuit in sector B2 of the cerebrum, the victims of this disease immediately forget all current and planned activities. Control over all such life-sustaining activities as, for example, hunger and thirst immediately ceases. The only thing which is judged to exist is the station which has just appeared. As a consequence, the situation escalates without control. Out of the 44 defects and illnesses which have now been recognised and listed, we are able to describe only the 10 most important ones here.

1. *Loss of knowledge of foreign languages.* Commonly used concepts such as "five up, split operating" etc. are no longer able to be translated into the mother tongue. This results in calling in simplex mode, directly on the transmission frequency of the rare station. The request "Full calls only please" is ignored totally, and the

DX station is bombarded with fragments of one's callsign.

2. *Dysfunction of speech recognition.* This is a syndrome which appears in epidemic proportions. In the first stage, numbers are no longer recognised. The reply to the request "stations with number 7, please" is fundamentally one's own callsign, but only if this does not contain the number 7. In later phases of the illness, the request "the station whose call ends with Tango" results in all victims of the disease replying, regardless of their callsigns.
3. *Loss of coordination.* It is no longer possible to comprehend the basic principles of operating technique. "One talks, the other listens", the banal basis of amateur radio, is forgotten. The result is an uncontrolled calling such as "Eggormeo, Eggormeo" or "Sugaralfa, Sugaralfa" during the transmission times of the DX station.
4. *Deafness.* This defect is also observed on very frequent occasions. Patients with total loss of hearing can be very easily recognised by the utterances "is this frequency in use?" and "who's the dx?". Damage of long duration often occurs, which can be recognised by the inconsiderate operation of local QSOs or the frequency of the DX station.

5. *Deterioration of visual acuity.* The visual acuity of nearly all persons in the fringe group is more or less limited by approximately 80% through the appearance of an oscillating internal ocular pressure.

As a result of this, analog and digital S meters are no longer able to be read accurately. The remaining visual acuity is barely sufficient to read "five nine", and in the advanced stages „you are five nine“ can be observed, even though there is only one (1) other station.

6. *Paralysis of the vocal chords.* This type of deterioration is marked by the fact that the formulation of words fails completely, and only primitive sounds such as "Ooola ola ooooooool", driven by instinct, are possible. These are exclusively transmitted in simplex mode. Often, only a whistling into the microphone is possible. In these cases, psychologists diagnose a very rare type of overestimation of personality (I am a bird!).
7. *Technical amnesia.* The operation of the short wave radio station, beloved above all, is no longer possible. Uncontrolled keying of the transmitter takes place. Tuning on the frequency of the DX station, lasting several minutes, replaces transmission technique. All fine technical feel has gone West, and energy is senselessly destroyed with all control elements at one's disposal set to their extremes. Signal bandwidths of more than 5 kHz are not uncommon.
8. *Loss of personality.* The capability for expressing oneself in a socially correct manner is lost. One's own personality suffers from total collapse, which expresses itself in the use of a vocabulary which leaves even seasoned radio amateurs with their mouths agape. In connection with this item, the

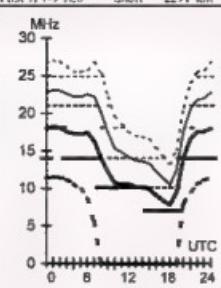
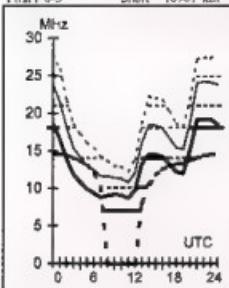
Continued on page 59

Adelaide-London**68 Brisbane-Auckland****123 March 2004**

First F 0-5 Short 16901 km

First 1F7-9 1E0 Short 2291 km

T index: 52



Legend

- UD
- E-MUF
- OMF
- D-MUF
- ALF
- 50%
- 55%
- 60%
- 65%
- 70%

Frequency scale
Time Scale

HF Predictions

by Evan Jarman VK3ANI

34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.

These frequencies are identified in the legend as -

- Upper Decile (F-layer)
- Layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D-region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit. These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

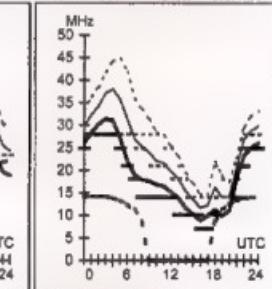
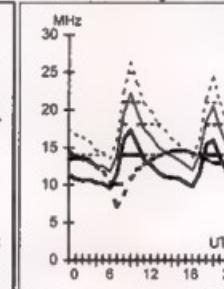
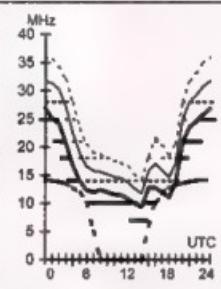
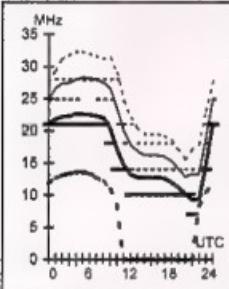
Adelaide-Singapore**311 Brisbane-Honolulu****49 Canberra-London****136 Darwin-Honolulu****55**

First 2F4-7 2E0 Short 5414 km

Second 4F3-7 3E0 Short 7599 km

First F 0-5 Long 23042 km

First 3F1-II 3E0 Short 8635 km

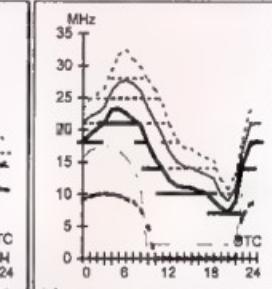
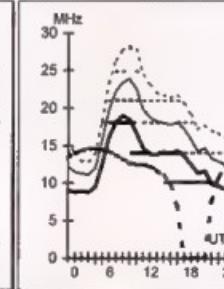
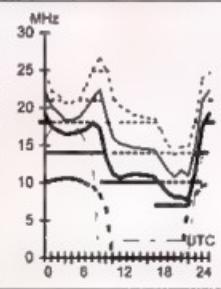
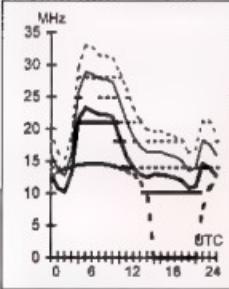
**Adelaide-Tel Aviv****291 Brisbane-Manila****316 Canberra-London****Darwin-Osaka****5**

Short F 0-5 Short 13125 km

Second 3F9-16 3E1 Short 5811 km

First F 0-5 Short 16982 km

Second 3F11-18 3E Short 5262 km

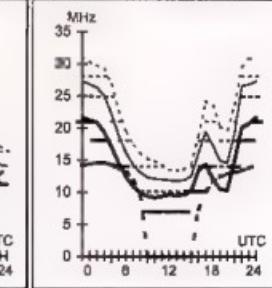
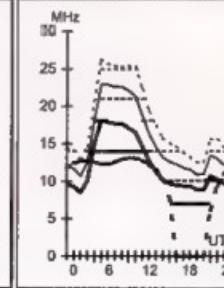
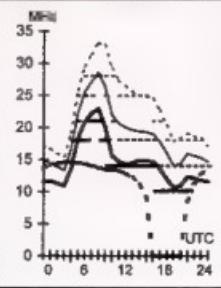
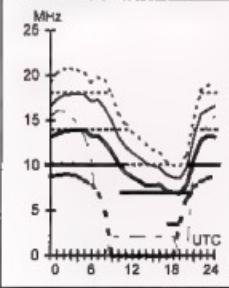
**Adelaide-Wellington****114 Brisbane-Rome****305 Canberra-Pretoria****331 Darwin-Seattle****44**

Second 2F13-17 2E Short 3214 km

First F 0-5 Short 16107 km

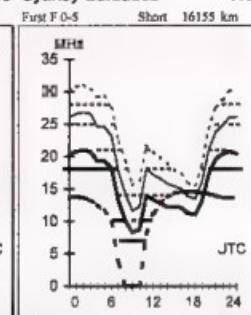
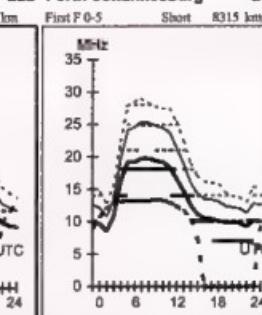
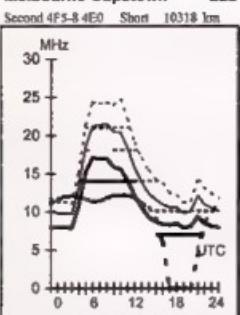
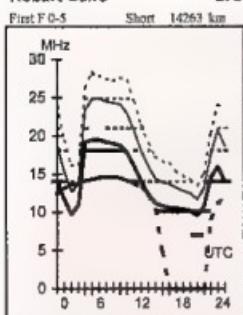
Second 4F4-7 4E0 Short 10824 km

First F 0-5 Short 12262 km

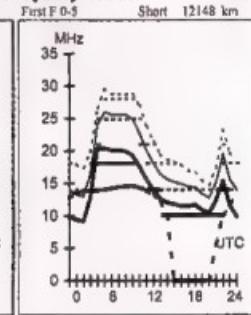
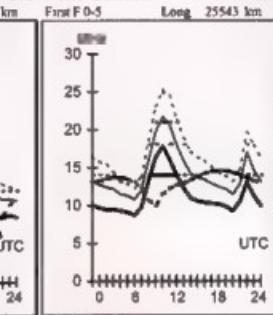
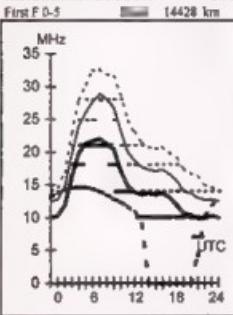
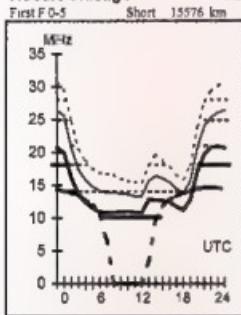


Hobart-Cairo**278 Melbourne-Capetown****222 Perth-Johannesburg****248 Sydney-Barbados**

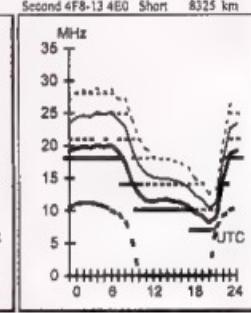
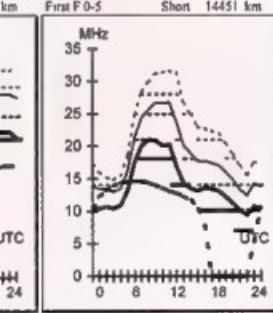
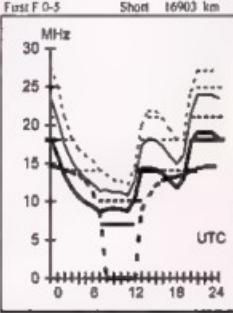
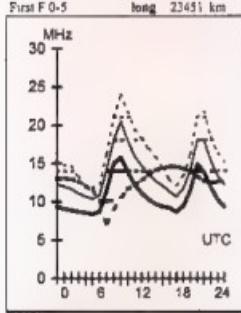
119

**Hobart-Chicago****72 Melbourne-Moscow****316 Perth-London****133 Sydney-Nairobi**

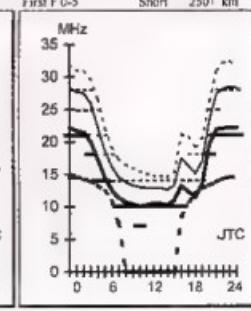
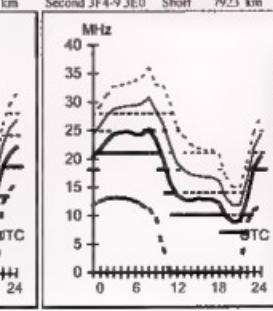
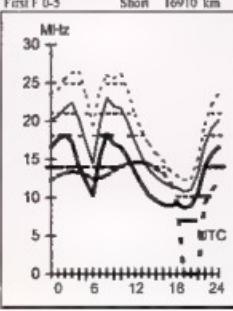
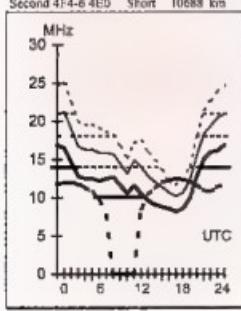
259

**Hobart-Calo****138 Melbourne-Quebec****60 Perth-London****313 Sydney-Seoul**

340

**Hobart-Santiago****149 Melbourne-Senegal****219 Perth-Tokyo****20 Sydney-Vancouver**

45



Beyond our shores

David A. Pilley VK2AVD
davpil@midcoast.com.au

5 MHz in Norway

Norwegian clubs have been experimenting on 80 metres for the past three years.

International Liaison Officer Ole Garpestad, LA2RR of NARL, reports that registered club stations there have enjoyed special permission to test on 5 MHz. Almost all of these club stations have one-letter call sign suffixes and, in some situations, they may use the LE prefix. The authorization is restricted for use in emergency communication or training, and Norwegian stations may not work stations outside of Norway on 5 MHz. Garpestad said Norway's elongated shape makes it impossible to communicate from one end of the country to the other on 80 metre, while 40 metre "has its shortcomings" during hours of darkness.

"We are only allowed to use the two frequencies 5.410 and 5.420 MHz, all modes, 100 W," he said, "but only for communication between Norwegian club stations engaged in emergency communication or training for such communication, so this does not include any station outside of Norway."

(ARRLN/L)

Long Delay Echoes (LDE)

Have you ever heard this phenomenon? Long Delay Echoes were first documented in the late 1920's and since many occurrences have been reported. However, according to Alan Goodacre (VE3HX), there is still considerable scepticism about their existence. Alan has made a dedicated study of these and reports he has heard hundreds of LDE during his 50 years in Amateur Radio. Most of the LDE exhibit delays ranging from one or two to several seconds and very occasionally delays exceeding half a minute occur!

When studying LDE Alan has his antenna (4x4) pointing vertical and says he is trying to break the celestial pile-ups instead of the terrestrial ones! In order to ensure that any LDE originating

from his transmitter is not merely a hoax, he sends a coded signal. Much of his experiments are conducted on 10 metre. Pointing the antenna toward the auroral zone has produced interesting 'plasma' effects. Alan would be pleased to hear from anyone who observes LDE especially if he or she is able to record both the transmitted signals and echoes. QTHR or ve3hx@rogers.com

(FOC Journal 57)

QRP in Europe

QRP Over the Christmas period, Richard Newstead, G3CWI, carried out tests with a transmitter running just under 3 micro-watt. This small signal was positively identified by two stations in Germany, one in Holland and one in Belgium. The transmissions were on the 10 MHz band using very slow CW with 30-second dot lengths. This is a technique that has been widely used for LF communications at 136 kHz but is less common on the HF bands. Richard was encouraged to try this low power after receiving 'complaints' that earlier test transmissions using 150 milliwatt were "too strong"! There is an active group of HF QRSS experimenters in Europe and details are on the Internet http://www.cnts.be/knights_qrss/

(RSGB/Qnews)

Sad news from Nepal

Some bad news about ham radio in Nepal. Charles Harpole, K4VUD, says that his efforts, along with those of 9N1AA, to expand ham radio in that nation and to establish a memorial club station for the late Father Marshall Moran, 9N1MM, are on an indefinite hold. This is due to the disturbed social and political conditions there.

Harpole says that all radios and other gear that was donated some years ago have been distributed to the currently licensed native 9N hams. Harpole says that the gear will come back to a club station someday. Harpole asks that everyone bear with this situation and extend understanding.

(OPDX/ARNnewsline)

United States propose new entry level

The ARRL will ask the FCC to create a new entry-level Amateur Radio license that would include HF phone privileges without requiring a Morse code test. The League also will propose consolidating all current licensees into three classes, retaining the Element 1 Morse requirement—now 5 WPM—only for the highest class. The entry-level license class—being called "Novice" for now—would require a 25-question written exam.

It would offer limited HF CW/data and phone/image privileges on 80, 40, 15 and 10 metre as well as VHF and UHF privileges on 6 and 2 metre and on 222-255 and 430-450 MHz.

Power output would be restricted to 100 W on 80, 40, and 15 metre and to 50 W on 10 metre and up, thus avoiding the need for the more complex RF safety questions in the Novice question pool.

(Qnews)

USA DXCC rule change

At its January meeting, the ARRL Board of Directors removed paragraph 1.c) "The entity has a separate IARU member-society" from the criteria for determining a DXCC entity. This provision, implemented in 1998 as part of the DXCC 2000 Program, had provided that "An entity will be added to the DXCC List as a political entity if it . . . has a separate IARU member-society." Since then, the rule has allowed for the addition of four new DXCC entities and the retention of one existing entity. Unfortunately, the provision also had the unintended consequence of stimulating applications for IARU membership that do not further the objectives of the IARU, creating an unfortunate and unnecessary administrative burden. The rule change will have no effect on entities created by or as the result of the rule. According to DXCC Rule II, 5.C), "A change in the DXCC criteria shall not affect the status of any entity on the DXCC List at the time of the change." The other two criteria for the determination of a political entity for DXCC continue in effect.

The BPL fight

Other than the removal of the Morse Code from the licence, the most discussed subject world wide is "Broadband over Powerlines". Recently in North Carolina USA, Progress Energy invited several Raleigh area Radio Amateurs to observe their new Phase II BPL trial in a rural subdivision south of the city.

On January 15th Progress Energy fulfilled their promise to North Carolina Amateur Radio operators and invited several Raleigh area hams to observe their new Phase II BPL trial in a rural subdivision south of the city. The following is a report from Gary Pearce, KN4AQ who, together with other Amateurs, took part in the observation. It was interesting to note that some of the Progress Energy engineers were also Radio Amateurs.

BPL - Broadband over Power Lines - is a system for delivering high speed Internet through neighborhoods and into homes and businesses via the power lines. The technology places radio frequency signals on the power lines in parts of the spectrum between 2 and 80 MHz. Those signals radiate to some extent, and can cause interference to a receiver in the vicinity of the power lines. Naturally this has become cause for great concern among hams worldwide.

The BPL trial consisted of a half-mile of overhead feeder along a highway, and a few dozen homes passed by buried power lines. A "repeater" amplified the signal about every other block.

We were particularly interested in the spectrum used. We learned that each run of BPL, from repeater to repeater, uses

two blocks of spectrum, 2.5 and 3.5 MHz wide. At each repeater, a different block of spectrum is required.

The overhead feeder segment in this trial used spectrum blocks around 25 and 29 MHz. We listened with mobile equipment driving on the road adjacent to the power line, and received S-9 signals in the immediate vicinity of the line. Audio recordings were made.

The signal fell off quickly when driving away from the line, but a ham at a home station almost a mile away heard the 10-meter BPL signal about S-6 using an 80-meter dipole antenna.

Americon says a Network Operation Center can move any repeater to another block of spectrum, or notch part of a block by remote control, to eliminate interference, but they were unable to demonstrate that for the test.

Even with that flexibility, fitting 3.5 MHz wide blocks of energy in between ham bands would be a delicate jigsaw puzzle. That much "empty" spectrum exists only between the 30, 20 and 17-meter bands, and it's empty only from the perspective of Amateur Radio.

Skip could completely upset the equation. BPL signals, which are similar to very low power QRP Amateur signals, could reflect off the ionosphere and appear hundreds or thousands of miles away. The energy of one isolated trial area might not have much impact, but a mature nationwide system with hundreds or even thousands of installations using the same spectrum blocks could be a very different story.

Yet to come in BPL, is a comprehensive report from the NTIA; an FCC Notice of Proposed Rulemaking for changes in Part 15, based on last year's

Notice of Inquiry; and a decision by the local utility about getting involved in BPL.

The hams at the test included Wake County ARES E-C Tom Brown, N4TAB, Technical Specialist Frank Lynch, W4FAL, and reporter Gary Pearce, KN4AQ.

Here in Australia, both the WIA and ACA are concerned with BPL. If you know of any experiments being carried out by your local energy supplier, please contact your WIA Divisional office.

(ARNewsline)

Ram QRM

A mysterious transmission that baffled British intelligence analysts for days was caused by a ram rubbing against an aerial mast. Radio operators at GCHQ Cheltenham were baffled by strange high frequency noises coming from an outstation at Scarborough. The noises were unlike anything encountered before and an investigating team initially thought they were coming from spies. Their investigation found the signal only happened during the day and went across all HF bands and were only received in Scarborough. The investigators eventually discovered that a Ram was rubbing its horns against the aerial mast "in between servicing some local Ewes". This (true) story appeared in a recruitment newspaper designed to attract graduates to GCHQ.

(RadCom Jan 04)

If you have interesting news from overseas, why not share it with us. Email or Snail me. 73 de VK2AYD

ar

Pileups are dangerous continued

study by the AWC shows a most interesting anomaly. This defect is also frequency-dependent, and has been observed for years to occur prominently in Europe on several frequencies on the 80 m band.

9. *Partial loss of memory.* The patients suffer from a puzzling loss of basic knowledge. Appointments and obligations of all types are totally forgotten. Cases have occurred in which the victims only remembered after divorce that they had previously been married.

10. *Repetition compulsion.* If syndromes 1 to 3 occur simultaneously, then there is an extremely high risk of a so-called "repetition neurosis", and a special type of retrospective temporal jumps. Some poor victims have been observed to still be calling for the rare station after many hours, even though propagation conditions had collapsed a long time previously and the band was dead.

In its last section, this greatly

persuasive study by the AWC describes the range of therapeutic possibilities. The results of systematic experimental studies are, however, not very promising. The only effective cure was determined by means of extended tests in the field: only immediate disabling of the transmitting station seems to result in success.

A copy of the publication "Pileup Operating Influences", 2002 edition, Gloss Publishing, London, can be obtained by sending return postage by email to hb9cic@uska.ch.

Over to you

Speaking with a single voice

If the morse code debate did anything, it certainly demonstrated that the amateur radio fraternity can speak with a predominantly single voice when the mood and the perceived cause is right. This particular occasion was made even more remarkable with the WIA joining the chorus of members and non-members alike in singing the praises of a world in which morse proficiency was no longer required. Still in tune, we are all moving on to plan 'B', the introduction of an entry class of licence.

Both of these concepts have evolved from the world of the committee process, which, fresh from its success with the horse, must cause us to pause and review the planned objectives in the light of what has happened so far. The death of morse code will, unquestionably, be regretted in the future, but it no longer had a place in the mandatory requirements for HF access. Hopefully, the skill will be preserved in the special interest groups and/or contests. The entry class licence, on the other hand, is a very complex issue that has the potential to change the world of amateur radio forever. Whether it will be for the better or worse is really in the hands of our leaders and this is where serious concerns must be held.

Limited class amateurs who have gained HF privileges already had operating experience and technical skills, probably above the average of those already on HF, and the pooling of this talent will, no doubt, be seen as we inevitably move to new modes. Let there be no doubt that unless we devise some form of attractive entry standard we will soon enough join the other dinosaurs. However, if we get it wrong, we will create a Trojan horse situation that will see our activities subjected to draconian regulatory and cost changes. Keep in mind that the initial thinking in respect of the entry process was directed at the High Schools.

My problem is that I see 2004 as possibly the most important year ever for amateur radio as we jointly join the era of the great spectrum drought and the great expansion of all things wireless that can be sold to a world hungry for information exchange. The recent public

meeting with the ACA certainly revealed that our major problem is that we are essentially leaderless. The ACA saw the WIA as a mere 20% stakeholder in the proceedings and, if the official response from the WIA is examined, it must be perceived that this is the official view also. Positive proof of this situation was well demonstrated by the proceedings being devoted to discussion on the fait accompli morse situation to the exclusion of any discussion on matters such as BPL, class licensing and interference policy, let alone anything to do with spectrum retention.

Be very clear that the weary volunteers are not the problem. Nor are the clubs that are doing a sterling job at the workforce. The real problem is with the divisional structuring of the WIA. Unless we can quickly get to some form of central body with the necessary status and legitimacy, and indeed ability, to speak for all amateurs we are literally leaderless.

Let us put the entry level licence on the back burner for the moment and put our total effort into the reforming of the WIA into some form of entity that can represent all amateurs in negotiations with the regulator, perform all administrative functions that can be devolved from the ACA, manage the spectrum allocated for amateur usage and control the activities of amateurs on these frequencies.

When we get to this stage the question of an entry licence, together with a host of other issues can be put back on the table.

George McLeod VK2FF

Interference

I strongly agree with the comments made by Geoff Wilson VK3AMX in the February issue. I recently suffered a noise problem which caused S9+20db interference on HF. I contacted the ACA, who sent their local man round. His attitude was appalling, he claimed that such noise levels were normal for a suburban area and "I should think myself lucky I was ever able to use a radio in a town, and not be surprised that now I can't". He advised me that I should move house to cure the problem

and said the noise was coming from to far away for him to be able to do anything about it.

Even after I had located to noise source and informed him of the exact address, he ignored me and told me the noise was originating from out of town.

After a strongly worded letter of complaint to his managers, reminding them of the exact wording of the ACAs customer charter, the noise problem was repaired. And surprise surprise, he claimed to have "found" the noise source at the address I had told him it would be.

Later his managers claimed they had investigated my complaint, but stated he "had acted in accordance with the usual professional practices in response to a request to investigate interference to amateur frequencies". Sadly, they are probably correct.

What was even more disappointing was the reaction of other amateurs when I told my story to them. One friend summed up the general attitude by saying "you were asking a government employee to work, you can't expect much".

We are customers of the ACA. Their customer charter says they will investigate and assist in resolving interference. If we all lost our apathetic attitude towards the ACAs lack of customer service and complain when they refuse to help us, rather than assume they won't help and not bother contacting them, maybe they will be forced to remember their customer charter when faced with an amateur radio operator with a problem.

Jack Cook VK2CJC

Views expressed in the 'Over to you' column are those of the authors, and do not necessarily reflect the policies of the Wireless Institute of Australia.

Send contributions to:

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Amateur Radio Magazine
34 Hawker Crescent
Elizabeth East SA 5112
or email:
edarmag@chariot.net.au

Over to you

Directional antennae in Canberra circa 2004

Most building and associated work in the A.C.T requires "Development approval" and "Building approval".

Development approval is needed for "An antenna or aerial" if it exceeds 5 metre in height above ground level". Development approval will also be needed if "the aerial" is to be built in front of a residence.

Specific provision is made for exempting "a receiving satellite dish" and a "microwave receiving dish", "on a building".

A "Satellite Receiving dish" "of up to 0.65 metre in diameter on a building in a residential area is exempt from development approval providing "the dish and its supports are not visible from the street at the front, or (from) an adjacent block, and it is 12 metre or more from an adjacent block".

"No part of the dish or its supports may project above the roof line of an adjacent pitched roof, and in a non commercial area the dish and its supports must not be conspicuous from an adjacent residential area".

In a non-residential area the "satellite receiving dish" may be up to 1.5 metre in diameter, but the dish and its supports must be colour matched to their background and have a matt finish.

A "receiving microwave antenna" of up to 0.65 metre diameter must be no more than 1 metre high and be colour matched to its background and have a matt finish.

There is no reference to transmitting antennae, or to typical antennae used throughout the Amateur Service.

The basis for these specifications is not known, but they appear as Exemption 7 on page three of the October 2003 ACT Planning and Land Authority Information Bulletin.

If similar criteria were to be enforced on antennae needed for operation in the International Amateur Radio Service, many amateur activities would cease.

Should W.I.A Federal bring this matter to a head, or should we let sleeping dogs lie?

Col Harvey VK1AU

Echo Link Baghdad

I have just had a 90mins QSO with YI1SRA Laith in Baghdad using the echolink program

Laith was operating from an internet cafe as full internet access has yet to be widely restored in the city. With fellow members of the Baghdad Radio Club he is hoping to install a 2 m repeater in the city which could be linked up to echolink network via the internet allowing on-demand 24 x 7 contact with the city. Such a linked repeater could provide useful communications back home for any ham in Baghdad. Look out for Laith on Echolink, his email is laithtarq@yahoo.com

73 Ian Abel G3ZHI

Maltby Rotherham Yorkshire S66 8DY
http://www.qsl.net/g3zhi - has many ham
radio links
G4NJI IRLP 5200 Echolink 135909
Rotherham simplex 145.2875MHz
GB3XN IRLP 5708 Echolink 153126

ACA proposals re Licence classes

After reading the November edition of AR , I noticed that the VK1 News mentioned the current topic on ACA submissions. The point on absorption of the Novice licensees into the body of the AOCP licensees, is a very valid one.

There is a definite need to provide a realistic bridge between the proposed Foundation licence and the current AOCP licences. The idea of rolling the Limiteds into the full privileges for each licence class, is a sound idea.

Regards,

Peter Scales VK6IS

Ex-VK5 Ham honoured on Australia Day

OAM (General Division)

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- **TH3-Jnr or similar for Net and emergency operations on Salpan**. Owen KH0EX, helps out on the Pacific Inter Island Net also on emergency comms. If you have a TH3 lying around please let me know as I will ship it to Salpan. Chris, vk2uw@iprimus.com.au

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- **Big gen Marconi no 18**, model TF995/A/3/S, range 1.5 MHz to 220 MHz AM-CW-FM \$85. Merv VK3AFQ QTHR. Phone 02 6024 2537.

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- **Magnum 10/11 m mobile or base transceiver**, new condition \$250. VK3AIQ. Phone 03 5352 1331.

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- **Sequencer for Preamp, TR relay, Sand and PA**, homemade, al-new, fully assembled and tested, with 7 page loose leaf manual, 10 m wire by amateurs since 1996. For photo and spec pdf send email titled Sequencer Spec or phone. Firm price \$45.00 . P&P Geoff VK4GWC QTHR, Phone 07 5445 9986, email geoffcom@powerup.com.au.

WANTED QLD

* Article dealing with the Leader brand signal generator converting it from valve operation to transistor, contained in the March edition of Amateur Radio 1970. Gladly pay any expenses. Please phone Geoff VK4MGB, Phone 07 46619209 or email: woodhill@halenst.com.au

FOR SALE SA

* Data Handbook ICAs for Telecom subscriber sets, mobile cellular radio pagers, \$10. Radio Handbook 9th edition, published 1942 by Editors and Engineers \$12. Radio Handbook 14th edition \$15. Motorola 1974 semiconductor data library \$15. Other data books, contact gilmoores1@bigpond.com. Glenn Moore, 27 Wecoma Court, Craigmore SA 5114. Phone 08 8480 7550 BH.

* Yaesu FT-707, ideal rig to get on HF, mobile or base. All solid state, 80 to 10, including WARC bands, s/n CL121735, with manual and original packing \$350. Yaesu FP-707 matching 20 amp P/S and speaker, s/n IC090155 \$150. Ron VK5VH, QTHR. Phone 08 8363 9008

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* Coastwatchers complete 3B or 3BZ set (receiver, transmitter, speaker) or units/part thereof. Malcolm Haskard VK5BA QTHR, Phone/fax (08) 8280 7192, Email mhaskard@chariot.net.au

MISCELLANEOUS

* The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

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Division Directory

The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. There is one councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcast schedules and subscription rates. All enquiries should be directed to your local Division.

VK1 Division Australian Capital Territory, GPO Box 600, Canberra ACT 2601

President Alan Hawes VK1WX
Secretary Deans Wellington VK1IDW
Treasurer Bob Howie VK1BHB

VK2 Division New South Wales 109 Wigram St, Parramatta NSW (PO Box 9432, Harris Park, 2150)

(Office hours Tue., Thu., Fri., 1100 to 1400 hrs.)
Phone 02 9689 2417
Web: <http://www.wiansw.org.au>
Freecall 1800 817 644 (NSW only)
e-mail: vk2wi@wiansw.org.au
Fax 02 9633 1525

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Web: <http://www.sant.wia.org.au>
e-mail: peter.reichert@bigpond.com

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President Phil Corby VK7ZAX
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Broadcast schedules All frequencies MHz. All times are local.

VK1WI transmits each Thursday evening at 2000 hrs local time on VK1RGI 146.950 MHz and 438.375 MHz including the linked repeater system on VK2RGN Goulburn, VK2RHR High Range, VK2RMP Madden Plains and VK2RTW Wagga Wagga.

VK1 Home Page <http://www.vk1.wia.ampr.org>

Annual Membership Fees. Full \$80.00 Pensioner or student \$71.00. Without Amateur Radio \$48.00

VK2WI transmits every Sunday at 1000 hrs and 1930 hrs on some or all of the following frequencies (MHz): 1.845, 3.595, 7.146, 10.125, 14.170, 18.120, 21.170, 24.950, 28.320, 29.170, 52.150, 52.525, 144.150, 147.000, 432.150, 438.525, 1273.500. Plus many country regions on 2m and 70cm repeaters. Highlights are included in VK2AWX Newcastle news Monday 1930hrs. on 3.593, 10 metres and local repeaters. The text of the bulletins is available on the Divisional website and packet radio. Continuous slow morse transmissions are provided on 3.899 and 145.850. VK2RSY beacons on 10m, 5m, 2m, 70cm and 23cm. Packet on 144.850.

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VK3BWI broadcasts on the 1st Sunday of the month at 20.00hrs Primary frequencies. 3.615 DSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 436.225, and VK3RMU 438.075. Major news under call VK3ZW1 on Victorian packet BBS and WIA VIC Web Site.

Annual Membership Fees. Full \$87.00 Pensioner or student \$72.00. Without Amateur Radio \$55.00

EVERY SUNDAY, at 9am LOCAL (Sat 2300 UTC). From Far North Queensland On 7.070/2 MHz. From South East Queensland- 1.825, 3.605, 7.116, 10.135, 14.342, 21.175, 52.525, 147.000, 438.500 MHz. Right throughout VK4 can 148.6 to 148.0 MHz again at 9am local. SUNDAY 8.45pm hear LAST week's QNEWS broadcast 3.805 and 147.0 MHz from South East Queensland. MONDAY 7.00pm hear YESTERDAY's news again on 146.875 MHz broadcast from Brisbane's Bayside repeater, and then 7.30pm on 3.605 and 147.0 MHz from 5th East Queensland. Text editions on packet internet and personal email, visit www.wia.org.au/vk4 News is updated 24/7 in both text and audio on this site. MP3 Audio from same website by 2300 hours each Saturday. Contact QNEWS, packet sp

QNEWS@VK4WIE.BPE.QLD.AUS.COM.e mail qnews@wia.org.au

Annual Membership Fees. Full \$95.00 Pensioner or student \$81.00. Without Amateur Radio \$63.00

VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATW Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.875 MHz FM. The broadcast is available in "RealAudio" format from the website at www.sant.wia.org.au Broadcast Page area.

Annual Membership Fees. Full \$91.00 Pensioner or student \$76.00. Without Amateur Radio \$61.00

VKGWIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury), 147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900, 147.000, 147.200, 147.250 and 147.350 MHz. Also in "Real Audio" format from the VK6 WIA website

Annual Membership Fees. Full \$71.00 Pensioner or student \$65.00. Without Amateur Radio \$39.00

VK7WI: At 0930 hrs every Sunday on 146.700 MHz FM (VK7RHT, Hobart) and relayed on 147.000 MHz FM (VK7RAA, Launceston), 146.625 MHz FM (VK7RMO, Ulverstone), 146.750 MHz FM (VK7RNW, Ulverstone), 147.075 MHz FM (VK7RWC, Rosebery), 3.57 MHz LSB, 7.094 MHz LSB, 14.130 MHz USB and UHF CB Channel 15 in Hobart area.

Annual Membership Fees. Full \$90.00 Pensioner or student \$77.00. Without Amateur Radio \$57.00

VK8 Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz. The broadcast is downloaded via the Internet!

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supporting the community



Paddy VK4JPD (left), President of BDARS in the Redlands Shire is shown presenting a cheque to Darryl Humphries-the Coordinator, Resource Centre in the Library of the Alexandra Hills State High School. The proceeds will be used by Darryl to purchase suitable books which will have acknowledgement labels affixed to them. BDARS meet in one of the school classrooms free of charge. (Photo by Victor VK4WST)

The President of BDARS, Paddy VK4JPD is shown presenting our education award to Rod VK4VRD (formerly VK4HRD) at his home in Kenmore; a western suburb of Brisbane, for his success in upgrading his licence from Novice Limited to Novice. Rod accomplished this in spite of suffering a chronic illness and being severely vision impaired.

Congratulations Rod! (Photo by Victor VK4WST, Secretary)



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